



Kentucky's Unbridled Future Strategic Economic Development Plan January 2012



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Introduction

The strategic economic development plan for the Commonwealth of Kentucky, *Kentucky's Unbridled Future*, was developed with the involvement of nearly 2,200 participants during a six-month process. *Kentucky's Unbridled Future* is meant to provide direction to the Kentucky Cabinet for Economic Development and its partners over the next five years in guiding the state's economic development efforts.

Boyette Strategic Advisors conducted the following four-step process in development of *Kentucky's Unbridled Future*:



The plan includes both the identification of 10 strategic business/industry sectors for Kentucky to focus its economic development efforts over the next five years, as well as six priorities with actionable strategies related to each. Many of the targets and priorities identified are based on extensive research as well as input received from stakeholders across the Commonwealth.

BSA gives special thanks to the Kentucky Cabinet for Economic Development (KCED), the Kentucky Economic Development Partnership Board, and the many stakeholders who participated in the development of this plan, *Kentucky's Unbridled Future*.

Stakeholder Input

Nearly 2,200 Participants

- Visioning Meetings – 450+
- Interviews/Group Discussions – 50+
- Online Surveys – 1677
 - *Economic Development Partners Survey* – 205
 - *Company Survey* – 845
 - *Resident Survey* – 627
- Project Website:

www.KentuckysUnbridledFuture.com



Kentucky Targets



STRATEGIC BUSINESS/INDUSTRY SECTORS

Five targeted categories and 10 strategic business/industry sectors, along with niche sectors for most, have been identified as priorities for the Commonwealth of Kentucky's recruitment and retention efforts over the next five years. The determination of these targets involved the review of the current business/industry base in the Commonwealth, current targeted sectors of various state, regional and local economic development organizations in Kentucky, recent project activity and other emerging sectors that have shown growth at the national, state and, possibly, local level. The targeted categories and sectors are outlined below and further defined in this section.

| Advanced Manufacturing | | | Sustainable Manufacturing | | | Technology | | Transportation | Healthcare |
|------------------------|--------------------------------------|-------------------------------------|---------------------------|------------------|-----------------------|-----------------|--------------|----------------------------|-----------------------------|
| Automotive | Batteries and Energy Storage Devices | Value-Added Agriculture & Beverages | Energy-Efficient Lighting | Renewable Energy | Sustainable Packaging | Life Sciences | Data Centers | Distribution and Logistics | Healthcare Services |
| OEMs | Lithium-ion Batteries | | LED Lighting | Bioenergy | Food | Bio-technology | | | Pharmacy Benefit Management |
| Suppliers | R&D | | | Solar Component | Pharmaceuticals | Medical Devices | | | Long-Term Care & Homecare |
| Hybrid & Electric | | | | Wind Component | | Nutri-genomics | | | |
| R&D | | | | Clean Coal | | Pharmaceuticals | | | |



Advanced Manufacturing

While there currently is not an official, widely-used definition for advanced manufacturing, a common one is that advanced manufacturing involves the use of advanced, innovative, or cutting-edge technology to improve products and/or processes. The National Council for Advanced Manufacturing (NACFAM) defines advanced manufacturing as “extensive use of computer, high precision, and information technologies integrated with a high performance workforce in a production system capable of furnishing a heterogeneous mix of products in small or large volumes with both the efficiency of mass production and the flexibility of custom manufacturing in order to respond rapidly to customer demands.”

The United States Department of Labor has classified advanced manufacturing as a high growth industry which is projected to add a substantial number of new jobs to the American economy. The manufacturing sector accounts for 14 percent of U.S. Gross Domestic Product and 11 percent of total U.S. employment. Advanced manufacturing jobs often require workers to possess advanced technical skills and such jobs typically offer higher salaries and benefit packages than traditional manufacturing jobs. The average salary and benefit package for manufacturing workers is \$65,000, which is higher than the average for the total private sector.

Manufacturing has traditionally been a significant contributor to the United States economy. Many companies are implementing process improvement techniques, incorporating quality management systems, and overhauling production operations with advanced technology in order to remain globally competitive. Additionally, many U.S.-based companies are bringing overseas manufacturing operations back to this country, further adding to the growth of the sector.

Strategic Sectors

Targeted sectors within the Advanced Manufacturing category for which Kentucky offers key competitive strengths include:

- Automotive
- Batteries and Energy Storage Devices
- Value-Added Agriculture and Beverage Products



Advanced Manufacturing

Automotive

GROWTH OPPORTUNITY AND TRENDS

The automotive OEM industry in the United States generates annual revenues of about \$200 billion, and the sector is forecast to grow at an annual rate of 14 percent per year between 2010 and 2015. After several sluggish years, numerous automotive companies are investing in equipment, expanding facilities, and creating new jobs. In May 2011, General Motors announced plans to invest \$131.1 million in the expansion and renovation of its Corvette facility in Bowling Green. The company is adding new machinery, equipment, and tooling to produce the new Corvette model and will also add 250 new jobs. Ford announced a \$600 million expansion that includes the addition of 1,800 new jobs late last year at its Louisville facility, and another \$600 million investment and 1,300 additional jobs were announced in October 2011.

A growing area of the automotive industry is in the production of hybrid and electric vehicles, and many major companies, including BMW, Ford, Honda, Mitsubishi, Nissan, Tesla, and Toyota, are already involved in the production of such vehicles. Although many OEMs are retooling existing facilities, new plants may be needed in the future. Growth of the hybrid and electric vehicle market could create opportunities for automotive suppliers as the sector's success is highly dependent on adequate supplies of the parts, components and other infrastructure needed to support the electric vehicle industry.

Major infrastructure components required include vehicle charging stations that enable drivers to refuel vehicles conveniently and advanced batteries for energy storage. Between 2010 and 2015, the demand for batteries for electric and hybrid electric vehicles is forecast to double, growing from \$7.7 billion in 2010 to \$14.5 billion in 2015. By 2017, the value of the global electric charging station market will reach \$8.1 billion and include 7.7 million locations, with 1.5 million in the U.S. Automakers Audi, BMW, Daimler, Ford, General Motors, Porsche, and Volkswagen are working together to design a single international standard for a vehicle fast charging system that will reduce the amount of time needed to fully recharge the battery. The standard system will enable vehicles made by any of the seven companies to share the same charging systems while accelerating the installation of systems into the overall infrastructure.

Niche Sectors

- OEMs
- Suppliers
- Electric and Hybrid Electric Vehicles
- Research and Development

Definition

AUTOMOTIVE ORIGINAL EQUIPMENT MANUFACTURERS

(OEM) are responsible for final assembly and completion of vehicles as well as research and development activities to design new vehicles and improve existing ones. **AUTOMOTIVE SUPPLIERS**

design, engineer, and manufacture parts and components such as engines and engine parts, electrical equipment, steering and suspension components, brake systems, transmission and power train parts, seating, and interior parts, which are needed to assemble vehicles. An **ELECTRIC VEHICLE** is powered by an electric motor instead of a gasoline engine. Electric vehicles use energy stored in rechargeable batteries which can be replenished via electric vehicle charging stations. **HYBRID ELECTRIC VEHICLES** combine a gasoline engine with an electric motor and rechargeable batteries to improve efficiency and reduce fuel consumption.



KENTUCKY ADVANTAGES

The automotive industry is one of the largest manufacturing sectors in Kentucky with approximately 440 automotive-related facilities, including automotive assembly plants for Ford, General Motors, and Toyota, and nearly 10 percent of all vehicles produced in the U.S. are assembled in the state. Kentucky ranks fourth among all states in light vehicle production. From January 2010 to October 2011, Kentucky had 114 automotive-related location or expansion announcements with a capital investment of more than \$2 billion and the creation of nearly 9,600 new jobs when full employment is attained.

This strong presence of automotive manufacturers and suppliers gives Kentucky an advantage for companies engaged in automotive-related research and development (R&D) activities. While much of automotive R&D activities are currently located in the Midwest and Northeast, there has been a definite shift in the industry to the South creating a logical need for new R&D centers to be located near automotive companies in southern states. The Institute of Research Technology Development at the University of Kentucky's College of Engineering is focused on research related to automotive coatings and painting technology.

Related to hybrid and electric vehicles, the Kentucky-Argonne Battery Manufacturing Research and Development Center in Lexington is focused on R&D activities related to the design and manufacture of lithium-ion batteries for use in vehicles and for energy storage purposes. Hitachi Automotive Systems Americas, Inc. recently said it plans to establish a \$74.5 million manufacturing facility in Berea which will produce electric drive motors for hybrid vehicles and employ 130 workers. Additionally, Toyota manufactures the Camry Hybrid in Georgetown.

Other advantages of Kentucky related to attracting automotive companies include its available sites and transportation resources. Kentucky has three certified megasites, located near the communities of Glendale, Hopkinsville, and Mayfield, which may be suitable locations for an automotive OEM facility. Kentucky's transportation resources include five major interstate highways, a strong network of main line and short line rail, an air freight hub for DHL North America at the Cincinnati/Northern Kentucky airport, and UPS's international air cargo hub at the Louisville International Airport.

Kentucky also offers competitive incentives, a low cost of doing business and affordable electricity rates with the fourth lowest average cost of electricity per kWh in the nation at \$.0673 in 2010 compared to the U.S. average of \$.0983 per kWh.

Location Criteria

- Proximity to customer or supplier
- Availability of a workforce with manufacturing skills
- Supportive environment for R&D activities
- Transportation resources
- State support and financial incentives
- Cost of doing business
- Low cost of electricity
- Right to work (foreign manufacturers)

Select Kentucky Companies

AKEBONO Brake

Ford Motor Company

General Motors

Hitachi Automotive Systems Americas

Montplast of North America

Toyota Motor Manufacturing



Advanced Manufacturing

Batteries and Energy Storage Devices

GROWTH OPPORTUNITY AND TRENDS

The primary growth opportunities within the batteries and energy storage devices sector are in the areas of batteries for smart-grid energy storage for electrical power generation and the use of batteries in electric and hybrid electric vehicles. It is projected that the United States will have the manufacturing capacity to produce 40 percent of the world's advanced batteries by 2015.

Lithium-ion batteries are the most commonly used battery in electric and hybrid electric vehicles because they are lightweight, recharge quickly and are reliable in extreme weather conditions such as excessive cold or heat. Between 2010 and 2015, the market demand for batteries for electric and hybrid electric vehicles is forecast to double, growing from \$7.7 billion in 2010 to \$14.5 billion in 2015.

Funding for research and development activities is important to companies in this sector, and in August 2011, the Obama administration made available more than \$175 million to battery companies, automotive companies, and research centers to support production of batteries for use in vehicles.

Lithium-ion batteries and other energy storage devices are used in smart-grid energy storage systems to ensure the reliable distribution of power. Especially when integrating power generated from renewable sources, such as solar and wind, into the main electrical grid, batteries and energy storage systems are needed to capture and store the electrical power and allow it to be reliably dispatched as needed through the power grid. Both utility companies and governments are increasingly recognizing that energy storage systems are critical to incorporating renewable energy into the smart grid, and the market for batteries that can be used for utility-scale smart-grid energy storage is projected to nearly triple between 2010 and 2015, growing from \$5.4 billion in 2010 to \$15.8 billion in 2015.

Niche Sectors

- Lithium-Ion Batteries
- Research and Development

Definition

BATTERIES AND ENERGY STORAGE DEVICES store chemical energy and convert it into electrical energy using a chemical reaction that transfers electrons to create electricity. Batteries and energy storage devices are used in consumer electronics such as cell phones, laptop computers, cameras, appliances, cordless power tools, medical devices, electric and hybrid electric vehicles, and large renewable energy systems. A **LITHIUM-ION BATTERY** (LIB) is a type of rechargeable battery that is relatively lightweight, durable, and possesses a high energy density. LIBs are often used in electronics and electric vehicles as well as in the military and aerospace sectors.



KENTUCKY ADVANTAGES

Kentucky has unique strengths and advantages related to the batteries and energy storage devices sector, especially in the area of research and development. The Kentucky-Argonne Battery Manufacturing Research and Development Center in Lexington, a state-of-the-art research center, is a partnership between the University of Kentucky, the University of Louisville, and Argonne National Laboratory focused on R&D activities related to the design and manufacture of lithium-ion batteries for use in vehicles and for energy storage purposes.

Conn Center for Renewable Energy Research at the University of Louisville is also focused on R&D activities related to battery and energy storage technology for distributed, grid scale, and solar or wind farms. The Center is researching manufacturing processes for cost-effective production of large-scale energy storage devices for solar and wind farms.

Lithium-ion batteries are being used more frequently by the automotive industry, and Kentucky is home to more than 400 automotive related facilities, including automotive assembly plants for Ford, General Motors, and Toyota. More than 10 percent of all vehicles produced in the United States are assembled in Kentucky making the state a good location for manufacturers of lithium-ion batteries for vehicles.

In October 2011, Hitachi Automotive Systems Americas chose Harrodsburg as the location of a new lithium-ion battery packs production facility. In the future Hitachi plans to make electric inverters for hybrid electric vehicles in Kentucky. The company is one of the few automotive suppliers which can develop and produce lithium-ion batteries, electric drive motors, and the electronic controls needed for electric vehicles. Also in October 2011, Johnson Controls said it will expand its automotive battery facility, investing \$24.2 million to add production lines and warehousing space resulting in the creation of 45 new jobs.

Kentucky also offers competitive incentives, a low cost of doing business and affordable electricity rates with the fourth lowest average cost of electricity per kWh in the nation at **\$.0673 in 2010 compared to the U.S. average of \$.0983 per kWh.**

Location Criteria

- Proximity to market demand
- Supportive environment and availability of funding for R&D activities
- Availability of a workforce with manufacturing skills
- Transportation resources
- Financial incentives
- Cost of utilities

Select Kentucky Companies

Energys

Hitachi Automotive Systems Americas

Interstate Battery System Of America

Johnson Controls

Spectrum Brands

Superior Battery Manufacturing

Swift Industrial Power



Advanced Manufacturing

Value-Added Agriculture and Beverage Products

GROWTH OPPORTUNITY AND TRENDS

Awareness, development, and adoption of innovative value-added products in step with consumer demand will help to ensure future development and a further strengthening of Kentucky's food products and beverage industries. Food trend expert Innova Market Insights reports that new food and beverage products with an ethical platform, which may be defined as products manufactured with more respect toward animal or human welfare, are faring better during the recent economic downturn. Data shows consumers who may be saving money elsewhere are choosing more value-added, ethical foods and beverages. Consumers believe that products manufactured with more respect toward animal or human welfare and the environment are worth the extra cost. New food products with an ethical positioning grew from 3.7 percent in 2008 to 6 percent in the first quarter of 2011. The U.S. market accounted for 25 percent of all new global products tracked with a "FairTrade" positioning from April 2010 to March 2011. This trend will require food processors to create foods with an eye on agricultural practices and sustainable ingredient sourcing.

Future food processing investment will likely be focused on the trends and emerging tastes that represent the future of the market. These include food safety, health/wellness/organics, buying local, regional cuisine, sports nutrition, and sustainability. Food products that provide extra health and medicinal benefits in addition to basic nutrition have gained in popularity. These "nutraceuticals" include processed foods, genetically engineered foods, herbal products and supplements, spices and florals, organics, and detoxifying agents. Annual sales exceed \$85 billion and are growing. The demand for certified organic foods represents a growth market, driven in part by a perception that changes in production and processing can improve freshness, safety, taste, and nutrition. Nationally, sales in 2009 reached \$25 billion, with the largest growth sector, organic fruits and vegetables, representing 38 percent of total organic food sales.

The beverage industry is beginning to rebound from the economic downturn. According to 2010 economic data released by the Distilled Spirits Council of the United States, supplier volumes rose 2 percent to 190 million cases and revenue rose 2.3 percent to \$19.1 billion in 2010. Whiskey showed

Definition

The term "**VALUE-ADDED**" includes an agricultural commodity or product that has undergone a change in physical state or was produced, marketed, or segregated (e.g. identity-preserved, eco-labeling, etc.) in a manner that enhances its value or expands the customer base of the product. As a result of the change in physical state or the manner in which the agricultural commodity or product is produced and segregated, the customer base for the commodity or product is expanded and a greater portion of revenue is made available to the producer of the commodity or product.

Companies in the **BEVERAGE** industry produce alcoholic and nonalcoholic drinks. Alcoholic beverages include beer, distilled spirits, and wine; while nonalcoholic beverages include carbonated drinks, juices, energy and sports drinks, water, coffee, and tea.

strong revenue growth, particularly in the super premium segment, which increased by 8.1 percent overall to over \$1.1 billion. The distilled spirits industry's annual growth rate is predicted to accelerate to 3.9 percent growth over the five years to 2015.

KENTUCKY ADVANTAGES

Kentucky is home to an estimated 85,000 farms totaling 14 million acres and an average farm size of 164 acres. Major crops include corn, wheat, barley, soybeans, sorghum, and fruit, in addition to livestock such as cattle, poultry, eggs, and hogs. This agricultural history has contributed to the growth of the food manufacturing industry in Kentucky. Approximately 12 percent of the manufacturing jobs in the Commonwealth are in the food products manufacturing industry. The industry employs nearly 26,000 workers and includes almost 300 companies, with an additional 4,400 employed in beverage manufacturing. Some of the larger companies that produce food products in Kentucky include Kellogg's, Swift, Tyson Foods, Sara Lee, Unilever, JM Smucker, and Nestle.

In the beverage sector, Kentucky produces 90 to 95 percent of the world's bourbon supply. Leading distilleries in the Commonwealth include Jim Beam, Heaven Hill, Maker's Mark, and Wild Turkey. Bourbon production has increased more than 50 percent since 1999. Today, there are 19 distilling establishments in Kentucky, which are owned by 10 corporations. These distilling companies employ approximately 3,200 people, with an annual payroll of about \$244 million. In addition to the bourbon industry, Kentucky also has more than 110 grape producers growing almost 600 acres of grapes that serve more than 60 small farm wineries.

In addition to this significant employment, the University of Kentucky College of Agriculture conducts research at its Agricultural Experiment Station. Researchers address problems of agribusiness, consumers, international trade, food processing, nutrition, community development, soil and water resources, and the environment with over 300 externally funded projects.

Kentucky's transportation resources include five major interstate highways, a strong network of main line and short line rail, an air freight hub for DHL North America at the Cincinnati/Northern Kentucky airport, and UPS's international air cargo hub at the Louisville International Airport. Kentucky also offers competitive incentives, a low cost of doing business and affordable electricity rates with the fourth lowest average cost of electricity per kWh in the nation at \$.0673 in 2010 compared to the U.S. average of

Location Criteria

- Reasonable energy costs
- Comprehensive transportation network
- Competitive labor costs
- Cost of doing business
- Financial incentives
- Proximity to supply chain and consumers

Select Kentucky Companies

Bel USA Inc.
 Jim Beam Brands
 JM Smucker
 Kellogg Snacks
 Maker's Mark Distillery
 Unilever Foods



Sustainable Manufacturing

\$.0983 per kWh.

The United States Department of Commerce defines sustainable manufacturing as “the creation of manufactured products that use processes that are non-polluting, conserve energy and natural resources, and are economically sound and safe for employees, communities, and consumers.” The National Council for Advanced Manufacturing (NACFAM) defines sustainable manufacturing as “the manufacturing of sustainable products such as renewable energy, energy efficiency, green building, and other 'green' and social equity-related products.”

Sustainable manufacturing will be an important driver of global efforts to tackle climate change and support a healthier environment. Sustainable manufacturing provides opportunities to develop new technologies and industries, increase competitiveness, and bring about structural change in economies. For entrepreneurs and small business, sustainable manufacturing provides excellent opportunities as such firms typically have flexible business models, are less reliant on established processes, and can more quickly adapt to change.

One trend leading to the growth of the sustainable manufacturing sector comes from retailers who are demanding their suppliers adopt sustainable manufacturing processes, introduce new “green” products, reduce packaging, or convert to more environmentally friendly packaging. A study by Harvard and London Business Schools found that financial analysts rate companies with a visible reputation for environmental responsibility higher than others. Additionally, younger workers tend to value sustainability and desire employers and workplaces that are environmentally friendly.

Strategic Sectors

Targeted sectors within the Sustainable Manufacturing category for which Kentucky offers key competitive strengths include:

- Energy-Efficient Lighting
- Renewable Energy
- Sustainable Packaging



Sustainable Manufacturing

Energy-Efficient Lighting

GROWTH OPPORTUNITY AND TRENDS

Perhaps the greatest factor contributing to the growth of the energy-efficient lighting sector is that such bulbs have a much smaller environmental footprint and can reduce energy costs up to 75 percent when compared to incandescent bulbs. Additionally, many countries around the world, including the United States, are phasing out commonly used incandescent light bulbs and replacing them with energy-efficient lighting. Beginning January 1, 2012, 100-watt incandescent light bulbs will no longer be manufactured in the United States, followed by a phase out of the 60-watt incandescent bulb in 2013 and the 40-watt incandescent light bulb in 2014. Such changes are very likely to increase the use of CFL bulbs, halogen bulbs, and LED lighting in residential homes, retail stores, and commercial buildings.

LED lighting has the strongest growth opportunity, and a report released by Greentech Media Research in 2010 predicted the LED lighting market in the United States will grow by 30 percent in 2011 and reach \$1 billion in annual revenue by 2014. Additionally, the global market for LED lighting is expected to grow to \$14.8 billion by 2015.

One trend impacting the strong growth of the market is the demand for LED lights for use in electronics such as displays for LCD televisions, laptop and tablet computers, mobile phones, and other handheld or portable electronic devices.

Another trend leading to growth in the market is the increasing use of LED lighting in automobiles. The advantages of using LED lights in vehicles are that they are more efficient, smaller in size, have a longer lifespan, and can turn on up to 10 times faster than incandescent bulbs, which improves safety especially when used as headlights or brake lights. LED lights can be used in interior lighting (such as dome, dash, and floor lighting), indicator lights on the dashboard, and "infotainment" lighting such as navigation systems and DVD players. Exterior lighting uses include tail lights, turn signals, brake lights, parking lights, fog lamps, and daytime running lights.

Niche Sector

Light-Emitting Diode (LED) Lighting

Definition

ENERGY-EFFICIENT LIGHTING includes compact fluorescent light (CFL) bulbs, halogen bulbs, or **LIGHT-EMITTING DIODE (LED)** bulbs. LED lighting uses a specific type of bulb in which a current is passed through a diode to start and regulate the flow of electricity so that the bulb operates at maximum efficiency. Advantages of LED lighting include that they offer greater energy efficiency, better lighting disbursement, less heat generation, greater durability and reliability, and longer lifespan. Such bulbs are used for residential, commercial and outdoor lighting; aviation lighting; automotive lighting; traffic signals; appliances; and in electronics such as televisions, DVD players, cell phones, computers and remote controls.

KENTUCKY ADVANTAGES

Kentucky has a small base of companies that manufacture energy-efficient lighting products, including GE Lighting in Lexington, which recently announced a \$10 million expansion to produce a new line of energy-efficient halogen spotlights and floodlights in order to meet customer demand for such products. Another company, LSI Industries in Independence, expanded its facility in 2010 to install new equipment that will be used to make LED lighting for the outdoor advertising industry.

One of the location criteria used by energy-efficient lighting companies during the site selection process is the proximity of the new location to the company's customer base. Kentucky is located within a day's drive of more than 60 percent of the United States' population, and as the incandescent bulb is phased out, it will be important for energy-efficient lighting companies to be able to quickly transport their products to the consumer. Kentucky's transportation resources include five major interstate highways, a strong network of main line and short line rail, an air freight hub for DHL North America at the Cincinnati/Northern Kentucky airport, and UPS's international air cargo hub at the Louisville International Airport.

Additionally, LED lighting is being used more frequently by the automotive industry, and Kentucky is home to more than 440 automotive-related facilities, including automotive assembly plants for Ford, General

Motors, and Toyota. More than 10 percent of all vehicles produced in the United States are assembled in Kentucky making the state a good location for LED lighting companies that manufacture automotive bulbs.

Kentucky has a labor force of more than 2.1 million workers, of which more than 15 percent are employed in the manufacturing sector and likely have skills which could be transferable to positions with energy-efficient lighting companies. Kentucky also offers competitive incentives, a low cost of doing business, and affordable electricity rates with the fourth lowest average cost of electricity per kWh in the nation at \$.0673 in 2010 compared to the U.S. average of \$.0983 per kWh.

Select Kentucky Companies

GE Appliances and Lighting

HP Enterprise Services

Humana Inc.

Maximum ASP LLC

Perot Systems

QED, Inc.

Location Criteria

- Proximity to market demand
- Availability of supply chain
- Supportive research and development activities
- Cost of labor and the availability of a workforce with manufacturing skills
- Financial incentives
- Cost of utilities



Sustainable Manufacturing

Renewable Energy

GROWTH OPPORTUNITY AND TRENDS

Bioenergy production has increased approximately 20 percent per year in the U.S. over the last 10 years, and in 2010, the industry produced a record 13.23 billion gallons of fuel. The best option for long-term production is fuels made from biomass such as wood chips and pellets, perennial grasses, and crop waste. Wood and wood pellets produced from trees grown in sustainably managed forests or forestry by-products are a good source of biomass and can be used for conversion into bioenergy. A small number of conventional power plants have begun substituting biomass for a percentage of the coal they normally burn. The process reduces emissions of sulfur dioxide and carbon dioxide, and it works best when the coal plant is located within close proximity to the source of biomass. It was announced in August 2011 that the U.S. Departments of Agriculture, Energy and the Navy will invest up to \$510 million over the next three years in partnership with the private sector to produce advanced biofuels used to power military and commercial vehicles, jets, and ships.

The growth of the solar industry is strongly influenced by government policy such as tax credits, financial incentives, capital expenditure grants, and renewable electricity credits, and the growth of the sector has slowed in the U.S. when compared to other countries. However, with additional government support, the solar industry in the U.S. has the potential to grow, and the presence of Hemlock Semiconductor in Clarksville, Tennessee, just south of the Kentucky state line, could present an opportunity for Kentucky to attract customers of Hemlock.

According to the American Wind Energy Association (AWEA), the wind power industry in the U.S. grew by 15 percent in 2010 and provided 26 percent of all new electric generating capacity. New reports indicate a fast-growing area is the market for small wind turbines used to power residential homes, small businesses, or small communities. The small wind power market is projected to double by 2015, reaching a value of \$634 million and creating a need for parts and components needed to manufacture the turbines.

Opportunities related to clean coal technologies include processes that reduce sulfur dioxide and nitrogen oxide emissions as well as capture and store carbon dioxide from coal-fired power plants,

Niche Sectors

- Bioenergy
- Solar Component Manufacturing
- Wind Component Manufacturing
- Clean Coal Technology (*Existing Industry Target*)

Definition

RENEWABLE ENERGY comes from resources that are naturally regenerative or nearly inexhaustible, such as biomass, geothermal, solar, hydro, and wind energy. **BIOENERGY** is produced from feedstocks, such as crops, trees, and forestry residues, and industrial and municipal solid wastes. **SOLAR COMPONENT MANUFACTURING** involves the production of semiconductors, solar cells, solar wafers, and solar panels, which are used to generate solar power. **WIND COMPONENT MANUFACTURING** refers to production of the parts and components needed to build and maintain wind turbines, which are used to generate wind power. **CLEAN COAL TECHNOLOGY** refers to the use of technologies that lessen the environmental impact of coal energy generation and improve the performance of coal-based electricity plants.



known as carbon capture and storage (CCS) technology, an emerging field.

KENTUCKY ADVANTAGES

Kentucky's research activities related to renewable energy are among its greatest advantages. The Center for Applied Energy Research (CAER) at the University of Kentucky (UK) has research focused in the areas of biodiesel, biomass, carbon materials, coal cleaning, electrochemistry, emissions control in utilities, and fuels. CAER includes the new UK Renewable Fuels Laboratory, which is dedicated to advancing the state's renewable energy industries, including biomass and biofuels.

The University of Louisville is in the process of establishing the Conn Center for Renewable Energy Research, which will conduct major research initiatives in a number of areas including solar energy conversion; renewable energy storage; biofuels/biomass conversions; and energy efficiency and conservation.

A new research center at Eastern Kentucky University, the Center for Renewable and Alternative Fuel Technologies (CRAFT), is working on ways to break down biomass materials for fuel production. The Cellulosic-Derived Biofuels Project will develop processes needed to breakdown cellulosic materials from agricultural residues, forestry waste, and crops such as switchgrass and sorghum into sugars, which can be used to produce biodiesel and JP8 jet fuel. The largest source of renewable energy in Kentucky may be biomass, and there are at least 14 native Kentucky plant species considered to be suitable for biomass energy production.

Related to wind component manufacturing, Kentucky is located near a number of new wind turbine manufacturing projects, the majority of which have located in Indiana, creating an opportunity for parts and component suppliers of such companies to establish a location in Kentucky. One such company, Global Blade Technology, recently established a new wind turbine manufacturing facility in Evansville, Indiana, just north of the Kentucky state line.

The Kentucky New Energy Ventures Fund is administered by the Kentucky Science and Technology Corporation on contract with the Office of Commercialization and Innovation. The \$5 million appropriated to the fund is used to support the development and commercialization of alternative fuel and renewable energy products, processes, and services in Kentucky. The program offers grants of \$30,000 and investments from \$250,000 to \$750,000.

Location Criteria

- Supportive governmental policies
- State and local financial incentives
- Proximity to market demand and supply chain
- Availability of funding for R&D activities
- Availability of a workforce with needed skills
- Cost of doing business

Select Kentucky Companies

Agrifuels LLC

Commonwealth Agri-Energy LLC

H L Spurlock Power Station

LG&E and KU Energy LLC

Parallel Environmental Services Corporation



Sustainable Manufacturing

Sustainable Packaging

GROWTH OPPORTUNITY AND TRENDS

While the overall packaging sector has experienced some slow down recently due to economic conditions and reduced consumer spending, some subsectors are growing. The sustainable packaging subsector, which has had strong growth during the economic recession, is the fastest-growing area of the packaging industry and is predicted to reach a value of \$142.4 billion by 2015.

One trend impacting such growth is a desire by companies to cut costs and reduce packaging waste by using recycled and reusable materials. The use of recycled materials and biodegradable materials in packaging has the greatest demand. Plastics comprise more than one-third of the total packaging industry, and environmentally friendly plastic packaging, such as bioplastics, is in high demand. Additionally, the increase in awareness by consumers about environmental hazards related to the manufacturing, transportation, and disposal of packaging materials, is leading some companies to incorporate sustainable packaging as a marketing tool, further driving the growth of the industry.

Specific markets using sustainable packaging that have growth potential, mainly due to consumer demand and preference, include pharmaceutical packaging and food packaging. Several major food and beverage companies, including H. J. Heinz Company, The Coca-Cola Company, and PepsiCo are using sustainable packaging for some products. In March 2011, Heinz began selling its ketchup in bottles partially made using the residue of sugar cane, a technology that Coca-Cola developed and has been using since 2009. In 2012, PepsiCo plans to introduce a plastic bottle made entirely from plant-based, fully renewable resources such as switchgrass, pine bark, and corn husks.

The global demand for pharmaceutical packaging is forecast to reach \$62 billion by 2015, and the U.S. will continue to be the largest consumer as drug companies bring sophisticated new therapies requiring specialized packaging needs to the market. New products such as prefillable syringes; single-dose packaging of products like skin patches, powders, creams, and ointments; and increased use of blister packs for pills instead of large plastic bottles also contributes to the growth of pharmaceutical packaging.

Niche Sectors

- Food Packaging
- Pharmaceutical Packaging

Definition

Packaging can be considered **SUSTAINABLE PACKAGING** if it meets one of a number of different criteria. Such packaging may be made from sustainable raw materials such as recycled or renewable materials. Packaging may also be considered sustainable if it is sourced, manufactured, and transported using renewable energy. Sustainable packaging must also be biodegradable or made from materials which are recyclable at the end of the packaging's life cycle.

Many companies are introducing new packaging designs which are more environmentally friendly, use less material, are more simply designed and are less costly but which do not compromise function, ease of use or convenience.



KENTUCKY ADVANTAGES

Kentucky has a strong cluster of companies in the packaging industry, and the sector continues to grow as several companies have announced expansions or new locations in the state in the last few years. In October 2011, packaging company Danafilms Inc. announced it planned to create 25 new jobs and invest \$12 million in its Simpson County facility. The company makes custom films used for packaging in industries such as food and beverage, lawn and garden, pet care, industrial, construction, and roofing. In April 2011, flexible packaging manufacturer UFLEX announced plans to invest \$180 million in new facilities in Elizabethtown as well as add 250 new jobs in two phases. UFLEX, the world's largest supplier of polyester films for packaging applications, is based in India, and the new facility in Kentucky will be its first in the United States. Integrated Pharmaceutical Packaging expanded its Glasgow packaging facility in 2010 and created 100 new jobs. The company invested over \$5.1 million and converts bulk medication into unit-of-use and dose-sized packaging as specified by its customers. Integrated Pharmaceutical Packaging works closely with Amneal Pharmaceuticals, which also expanded its operations in 2010 and is located in Glasgow.

Kentucky has a large base of companies in both the pharmaceutical industry and the food and beverage processing industry that may need packaging solutions, and especially may be interested in sustainable packaging options. Sustainable packaging companies that supply packaging for those sectors and locate in Kentucky could have a large base of potential customers.

Kentucky is located within a day's drive of more than 60 percent of the United States' population, and the state's

Location Criteria

- Proximity to market demand
- Cost of labor and the availability of a workforce with manufacturing skills
- Cost of utilities
- Cost of doing business
- Financial incentives

Select Kentucky Companies

Anderson Packaging, Inc.

C. W. Zumbiel Company

Cascades Boxboard US

Colbert Packaging Corp.

Danafilms

Dart Container

Integrated Pharmaceutical Packaging

Multi Packaging Solutions, Inc.

Southern Standard Cartons, Inc.

UFLEX



transportation resources include five major interstate highways, a strong network of main line and short line rail, an air freight hub for DHL North America at the Cincinnati/Northern Kentucky airport, and UPS's international air cargo hub at the Louisville International



Airport. Kentucky also has a labor force of more than 2.1 million workers of which more than 15 percent are employed in the manufacturing sector and likely have skills which could be transferable to positions with sustainable packaging companies. Additionally, the state offers



competitive incentives, a low cost of doing business, and affordable electricity rates with the fourth lowest average cost of electricity per kWh in the nation at \$.0673 in 2010 compared to the U.S. average of \$.0983 per kWh. Technology

Technology can be defined as the application of math, science, and the arts to improve life and mechanical processes and often involves the production or use of advanced or sophisticated devices to solve a problem or accomplish a specific task. The technology sector in the United States includes about 145,000 companies that have a combined annual revenue of more than \$1 trillion. It includes the fields of telecommunications, information technology services, semiconductor manufacturing, software, Internet services, engineering, electronics, medicine, biotechnology, and scientific research.

Strategic Sectors

Targeted sectors within the Technology category for which Kentucky offers key competitive strengths include:

- Life Sciences
- Data Centers



Technology-related jobs have typically been among the fastest growing over the last few decades. Mirroring many other industries, the economic recession has been difficult for the technology sector. However, global technology spending was forecast to grow 7.1 percent in 2011 and 8.7 percent in 2012, according to Forrester Research. Factors influencing growth of the technology sector include consumer demand for more high-tech electronic devices such as computers, tablet computers, and phones; an ongoing demand for technology to drive efficiency gains in business; and the increased need for more efficient and secure data storage space. Additionally, the research and consulting firm IDC estimates that one million new technology-related jobs will be created over the next four or five years, representing an increase of about 10 percent.



Technology

Life Sciences

GROWTH OPPORTUNITY AND TRENDS

In general, life sciences may be defined as all sciences that have to do with organisms like plants, animals, and humans. More specifically, the life sciences sector includes companies in the fields of biotechnology, pharmaceuticals, biomedical technologies, life systems technologies, nutraceuticals, cosmeceuticals, food processing, medical devices, and organizations and institutions engaged in research and development, technology transfer, and commercialization.

The most promising areas for growth within the life sciences sector include medical devices, the emerging field of nutrigenomics, and pharmaceuticals. In 2011, the global medical devices market is expected to grow between 4 percent and 6 percent, reaching total sales of about \$312 billion. Investments and venture capital funding for medical device companies in the United States totaled \$841 million for second quarter 2011, representing a 9 percent increase over the previous quarter. Growth of the medical devices niche is being primarily driven by the aging population (persons 65 years and over) which accounts for 13 percent of the nation's population as well as one-third of healthcare consumption. The increased occurrence of "lifestyle" diseases such as cardiovascular disease, diabetes, hypertension, and obesity is also increasing the demand for medical devices.

The emerging field of nutrigenomics is growing as consumers seek to understand how the food they eat interacts with their genetic predispositions to diseases like heart problems, cancer, diabetes, and obesity; and how certain foods can prevent those diseases as well as contribute to longevity and healthier lives. The demand for direct-to-consumer (DTC) nutrigenomic tests to assess risk of disease, personalize diets, and identify nutritional supplements, which may offer potential health benefits, has been growing over the last 10 years as consumers have become more concerned for their health. The market for nutrigenomic tests and products is currently estimated to be growing by 20 percent per year.

While growth in the pharmaceuticals niche has slowed slightly in the last few years, the subsector is still expected to grow 5 to 8 percent through 2014. Key growth areas will be in the development of generic drugs, vaccines, highly specific drugs such as those to treat rare diseases, and therapeutic drugs to treat

Niche Sectors

- Biotechnology
- Medical Devices
- Nutrigenomics
- Pharmaceuticals

Definition

BIOTECHNOLOGY includes the development of technologies and products that help improve the health and lives of both humans and animals.

MEDICAL DEVICE companies develop and manufacture medical instruments and supplies for use in surgery, patient care, diagnostics and laboratories.

NUTRIGENOMICS is the study of how nutrients in food interact with a person's DNA and genetic code, and how such interactions may be able to prevent disease and improve overall health and wellness. **PHARMACEUTICAL** companies develop and produce commercially available drugs licensed for use as medications and for diagnostic purposes.

cancers, heart conditions, central nervous system disorders, diabetes, and inflammatory diseases.

KENTUCKY ADVANTAGES

According to Bio.org, Kentucky has approximately 470 companies involved in activities related to biotechnology that employ over 7,800 workers. The state has experienced several expansions of biotechnology companies including an expansion by Neogen in June 2011. The company invested \$5.6 million in a 100,000-square-foot addition to its animal safety facility in Lexington and will add 75 new jobs. Neogen manufactures and distributes animal healthcare products, including diagnostics, pharmaceuticals, veterinary instruments, wound care, and disinfectants.

Select Kentucky Companies

Alltech, Inc.

Coldstream Laboratories Inc.

International Processing Corporation

Mediscribes Inc.

Murty Pharmaceuticals, Inc.

Neogen Corp.

Q E D, Inc.

Solstice Neurosciences, LLC

US Worldmeds, LLC

Whip-Mix Corporation

Xanodyne Pharmaceuticals, Inc.

Another company, Alltech, recently opened a Center for Applied Animal Nutrition and Nutrigenomics in Nicholasville, which is the first of its kind in the world. Researchers at the facility study the health and performance of a number of different kinds of livestock to determine the best nutritional interventions for peak production.

One major advantage Kentucky has in attracting both start-up and existing biotechnology companies is that it matches both Phase I and Phase II SBIR/STTR grants awarded at the federal level. Kentucky matches Phase I awards up to \$150,000 and matches Phase II awards up to \$500,000 a year for two years for research and development activities. Kentucky is one of the only states that matches Phase II awards, and such funding is critical to start-up companies that need to develop the new technology and attract private investment needed for commercialization.

Each of Kentucky's eight public four-year universities offers programs of study related to biotechnology. Kentucky also offers competitive incentives and a low cost of doing business.

Location Criteria

- Access to grants and investment funding
- Supportive university research and development activities
- Presence of other similar companies
- Available workforce with degrees in related fields
- Cost of doing business
- Supportive government environment



Technology

Data Centers

GROWTH OPPORTUNITY AND TRENDS

The explosion of services now available on the Internet has fueled data center construction, which is one of the fastest growing industries today. The digitization of media and regulations related to record keeping continue to fuel demand for increased data center capacity.

The 2011/2012 Data Center Market Insights report published by Data Center Knowledge indicates approximately half of data center professionals who participated in the study are currently expanding or planning data center expansion in 2012.

A separate study by Digital Realty Trust also forecasts significant growth for the data center market in 2011 and 2012. It indicates that two-thirds of respondents had added data center capacity in the last 12 to 24 months, while 85 percent report that they will definitely or probably expand their data center capacity in 2011. Other research indicates that the growth of the data center industry extends beyond the major U.S. markets. Over the past few years, a number of companies have assembled networks of data centers in small and medium-sized cities. These are typically multi-tenant facilities that rely upon demand from local companies needing IT infrastructure. In addition to these collocation centers, other projects are also locating in small cities, which are likely the result of broadband penetration and the integration of the Internet in the everyday routine of businesses of all shapes and sizes.

The information technology industry, particularly data centers, is also becoming more focused on implementing solutions that will reduce energy, expenses, and carbon emissions. A report from Pike Research indicates that the investment in greener data centers will experience rapid growth over the next five years, increasing from \$7.5 billion in global revenue to \$41.4 billion by 2015. The report predicts that the data center of the future will be energy-efficient and virtualized to ensure optimal use of IT resources, space, and energy.

Definition

A **DATA CENTER** is a centralized repository, either physical or virtual, utilized for the storage, management, and dissemination of data and information organized around a particular body of knowledge or pertaining to a particular business.

A private data center may exist within an organization's facilities or may be maintained as a specialized facility. These facilities are generally well equipped with hardware, software, peripherals, power conditioning and backup, communication equipment, and security systems.

KENTUCKY ADVANTAGES

Kentucky offers a variety of advantages to companies seeking a new data center location. Several new centers have recently located in Kentucky as a result of these advantages.

Eaton Corporation, a diversified power management company, has invested almost \$100 million in data centers in Simpsonville and Louisville, both of which expect to receive LEED Gold Certification. GE also recently opened a new data center in Louisville to support its Appliances and Lighting division. This facility, which has achieved LEED Platinum Certification, features high-intensity cooling systems, high density servers, off-site renewable energy, and reduced water consumption. GE revitalized an existing building for the new data center and maintained 98.3 percent of the walls, floors, and roof of unutilized factory space.

Kentucky also boasts a certified data center site located in Adairville. The site was designated as suitable for data center development as a result of a project conducted by the Tennessee Valley Authority which reviewed criteria including accessibility, strong telecommunications infrastructure, and the availability of reliable electric power in making its determination. The study, conducted for TVA by Deloitte Consulting, considered more than 50 sites across the TVA service area to identify sites that are optimal for data center locations.

Select Kentucky Companies

Eaton Corporation

GE Appliances and Lighting

HP Enterprise Services

Humana Inc.

Maximum ASP LLC

Perot Systems

Kentucky has the fourth lowest average cost of electricity per kWh in the nation at \$.0673 in 2010 compared to the U.S. average of \$.0983 per kWh. Kentucky also offers competitive incentives and a low cost of doing business.

Location Criteria

- Low risk of natural disasters
- Cost of electricity
- Latency/telecommunications infrastructure
- Financial incentives (sales tax exemptions on equipment)
- Cost of construction
- Cost and skill set of workforce



Transportation

The transportation sector provides services in areas related to warehousing, distribution, logistics, and supply chain management. Examples of services include planning, implementing, and controlling the movement and storage of raw materials, in-process inventory management, quality control, distribution networks, warehouse operations, and related information from the point of origin to the point of consumption. The warehousing industry has also evolved in the direction of providing logistics services by providing customers with the ability to identify, track, and expedite individual items through the supply chain. Many warehouse facilities are considered high throughput distribution (HTD) facilities rather than long-term storage buildings. These services have helped to improve the efficiency of relationships between manufacturers and customers by maintaining and retrieving computerized inventory information on the location, age, and quantity of goods available.

The U.S. warehousing and storage industry includes about 7,000 companies with combined annual revenue estimated at \$24 billion. The output of U.S. warehousing and storage services is forecast to grow at an annual compounded rate of 5 percent between 2010 and 2015. Total U.S. revenue for warehousing and storage rose 9.3 percent in the second quarter of 2011 compared to the same period in 2010.

Strategic Sectors

The targeted sector within the transportation category for which Kentucky offers key competitive strengths includes:

Distribution and Logistics



Transportation

Distribution and Logistics

GROWTH OPPORTUNITY AND TRENDS

U.S. freight traffic is expected to increase 100 percent by 2020, while over that same time period, foreign trade is projected to increase by 187 percent, with containerized cargo experiencing a 350 percent jump in volume. In addition, the number of wage and salary jobs in the truck, transportation, and warehousing industry is expected to grow 11 percent from 2008 through 2018.

Additional employment growth will result from manufacturers that outsource their distribution functions to trucking and warehousing companies that can perform these tasks with greater efficiency. As firms in other industries increasingly employ the industry's logistical services, such as inventory management and just-in-time shipping, many new jobs will be created.

Also, as more consumers and businesses make purchases online, the expansion of electronic commerce will continue to increase demand for the transportation, logistical, and value-added services offered by the truck, transportation, and warehousing industry. U.S. Department of Commerce data shows e-commerce sales in the U.S. totaled \$165.4 billion in 2010, which represented a 14.8 percent increase over 2009. Total online sales are projected to reach \$188 billion in 2011 and \$269.8 billion by 2015.

Another potential area of growth is in pharmaceutical distribution, which, in a post-healthcare reform world, will need to adopt the speed and agility of other more consumer-oriented industries. At the same time, the growth of biologics, bioengineered vaccines, and other advancements are diversifying the pharmaceutical portfolio with products that have a shorter shelf life and require more complex manufacturing and distribution processes than shelf-stable pills and conventional medicines.

Niche Sectors

- Internet Fulfillment
- Pharmaceutical Distribution

Definition

DISTRIBUTION involves the movement of goods and services from the source through a distribution channel to the final customer. Distribution centers are the foundation of a supply network that allow a single location to stock a vast number of products. Some organizations operate both retail distribution and direct-to-consumer out of a single facility, sharing space, equipment, labor resources and inventory. In general, distribution centers are usually viewed as demand driven. Distribution centers serve a broad range of industries, moving products as diverse as books, appliances, food, clothing, hardware, consumer electronics and others.



KENTUCKY ADVANTAGES

Kentucky's central location and extensive multi-modal transportation system provide significant advantages for distribution and logistics facilities. Five major interstate highways (I-75, I-71, I-65, I-64, and I-24) provide direct routing to the Great Lakes and Canada, the Gulf States and Florida, the Atlantic Seaboard, and St. Louis. Kentucky is also a center for mainline rail services provided by CSX, Canadian National, and Norfolk Southern, which provides services from the Great Lakes to the Gulf of Mexico. Western Kentucky offers an extensive inland waterway and river port system with access to the Upper and Lower Mississippi River, the Ohio River, and the Tennessee-Tombigbee waterways.

UPS operates its Worldport worldwide hub from the Louisville International Airport. The facility, which is capable of handling 416,000 packages per hour, is the largest fully automated package handling facility in the world. With more than 20,000 employees and 5.2 million square feet, this facility serves all major domestic and international hubs with 31,000 flights from the Worldport facility in 2010. Several other air freight and parcel providers also operate through Kentucky's air system, including an air freight hub for DHL North America at the Cincinnati/Northern Kentucky airport.

The Logistics and Distribution Institute (LoDI) is a research center at the University of Louisville (U of L) that is focused on developing new models, technologies and decision support systems that will help the private and public sectors address changes taking place in the logistics and distribution industry. U of L offers a graduate certificate program in logistics that is designed primarily for individuals who already work in the field of distribution and logistics in the Louisville area, or for those people who want to gain general knowledge in the field that may lead to career opportunities in distribution and logistics.

Eastern Kentucky University offers a bachelor of business administration degree with a concentration in global supply chain management. In addition, Northern Kentucky University offers course work in supply chain management as part of its business management program. Hopkinsville Community College is considering adding a transportation, distribution, and logistics program that would train students in the moving and storage of products and goods.

An estimated 78,000 people, or more than 5 percent of Kentucky's labor force, are employed in the transportation and warehousing sector which indicates the presence of a skilled workforce for the distribution and logistics sector. Kentucky also offers competitive incentives and a low cost of doing business.

Location Criteria

- Proximity to suppliers and customers
- Affordable and reliable workforce
- Telecommunications infrastructure
- Multi-modal transportation resources
- Financial incentives
- Cost of utilities

Select Kentucky Companies

Amazon.com

Amerisource Bergen

DHL

Dollar General Corp.

Fruit of the Loom

PCA Pharmacy

Pulmo-Dose

UPS

Walmart



Healthcare

The healthcare industry, or medical industry, is the sector of the economic system that provides goods and services to treat patients with curative, preventive, rehabilitative, or palliative care. The modern healthcare sector is divided into many sub-sectors, and depends on interdisciplinary teams of trained professionals and paraprofessionals to meet health needs of individuals and populations.

Subsectors of healthcare include the following:

- Biotechnology
- Diagnostic Substances
- Drug Delivery
- Drug Manufacturers
- Drug Related Products
- Healthcare Plans
- Home Healthcare
- Hospitals
- Long-Term Care Facilities
- Medical Appliances and Equipment
- Medical Instruments and Supplies
- Medical Laboratories and Research
- Medical Practitioners
- Specialized Health Services

The U.S. healthcare sector includes more than 780,000 hospitals, doctor offices, emergency care units, nursing homes, and social services providers with combined annual revenue of more than \$2 trillion. The U.S. output for healthcare is forecast to grow at an annual compounded rate of 7 percent between 2010 and 2016. Despite a pending shortage of doctors and nurses in the coming decade, employment in the healthcare sector increased over 30 percent in a recent 10-year period, with 40 percent employment gains among physician offices, medical and diagnostic labs, and home healthcare. It is expected to increase more than 22 percent between 2008 and 2018.

Strategic Sectors

The targeted sector within the healthcare category for which Kentucky offers key competitive strengths includes:

Healthcare Services



Healthcare

Healthcare Services

GROWTH OPPORTUNITY AND TRENDS

Ten of the 20 fastest growing occupations in the nation are healthcare related. As one of the largest industries in 2008, healthcare provided 14.3 million jobs in the U.S. It is estimated that the healthcare industry will generate 3.2 million new jobs between 2008 and 2018, more than any other industry, largely in response to rapid growth in the elderly population.

Within this rapidly growing sector, pharmacy benefit management (PBM) services plays a key role in efforts to control healthcare expenses. Currently, 95 percent of consumers with pharmaceutical drug benefits receive them through a PBM. Managing drug costs has become an even higher priority for health plans as the Rx benefit has come to represent a larger portion of outpatient healthcare expenses, and the role of PBMs has become increasingly more vital. Americans spend nearly \$200 billion a year on prescriptions, an amount that has increased 4.5 times since 1990. By 2015, that amount is expected to total \$450 billion.

Two leaders in the PBM services sector have recently expanded their capacity. Medco's mail-order business includes seven order-processing pharmacies and two automated dispensing pharmacies filling more than 100 million prescriptions a year. To expand capacity and improve efficiencies, the company recently built a third automated mail-order pharmacy fulfillment center in Indiana. Express Scripts opened a new pharmacy fulfillment center in St. Louis in 2010. The center supports the company's growing home delivery business, which is experiencing increased demand from clients and patients seeking to cut costs on traditional maintenance medications through the use of mail-order services.

Demand for senior care is another growing niche sector. By 2025, the U.S. senior population is projected to reach 72 million. As the elderly population increases, the long-term care market is expected to see steady growth. Since 2005, the market's value has grown from \$186 billion to \$258 billion. For the next five years, growth will continue at annual rates over 6 percent. Home care will also continue its strong expansion, accounting for revenues of \$112.6 billion in 2015 and 31.8 percent of all industry revenues.

Niche Sectors

- Pharmacy Benefit Management Services
- Long-term Care/Home Care Services

Definition

PHARMACY BENEFIT MANAGEMENT SERVICES (PBM) involves providing third party administration of prescription drug programs that process prescriptions for the groups that pay for drugs, usually insurance companies or corporations, and use their size to negotiate with drug makers and pharmacies.

A **LONG-TERM CARE** facility provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities of daily living. **HOME CARE** includes a variety of health-related services provided in the home or community. The home care staff provides assistance with the activities of daily living.



KENTUCKY ADVANTAGES

Healthcare and social assistance is the largest industry sector in Kentucky, with more than 215,000 employees representing 15.3 percent of the workforce. An additional 69,000 are employed in the finance and insurance sector, representing almost 5 percent of the workforce. The healthcare sector in Kentucky includes a wide-range of companies that offer data processing, pharmaceutical, computer support and help desk, medical management, and biomedical products and services. In addition, a number of healthcare companies are headquartered in Kentucky, including Humana, which offers a wide range of insurance products and health and wellness services; Signature Healthcare, a rehabilitative care provider; Health Warehouse.com, a mail-order pharmacy service; and Trilogy Health Services, which offers a variety of senior living services.

Kentucky is home to two comprehensive medical schools. The University of Kentucky (UK) Medical Center includes the colleges of Dentistry, Health Sciences, Medicine, Nursing, Pharmacy, and Public Health, as well as the clinical activities of UK HealthCare. UK developed the Kentucky medical curriculum, which is a recognized model for other medical colleges, emphasizing early clinical experiences, integration of the basic and clinical sciences, and innovative teaching methods. In 2010, UK was ranked among the top 20 medical schools in the U.S. based upon its "social mission score."

The University of Louisville (U of L) School of Medicine is part of a large Health Sciences Center that includes more than 200,000 square feet of research space, a comprehensive standardized patient clinic, and one of the largest academic medical simulation centers in the nation. In addition to the medical school, U of L also has schools of nursing, dentistry, and public health and has programs of distinction in Birth Defects and Oral Health, Cardiovascular Health, Genetics and Molecular Medicine, Neuroscience, Oncology, Ophthalmology, and Transplantation/Cellular Therapeutics. Nucleus, U of L's driving force behind the development of a life sciences hub in downtown Louisville, partnered with Signature HealthCARE to create the International Center for Long Term Care Innovation, the country's first long-term care innovation center, which works to develop early-stage health technology and services that companies need to bring new ideas to the aging care industry.

The University of Pikeville College of Osteopathic Medicine (KYCOM) has earned high marks as one of the top 20 medical schools in the nation in rural medicine. KYCOM also ranked fourth in the country in the percentage of graduates entering primary care residencies.

The Kentucky Biomedical Research Infrastructure Network is a collaborative network of biomedical researchers in state-supported and independent institutions of higher education that includes 13 colleges and universities across the state.

Location Criteria

- Adequate telecommunications infrastructure
- Presence of other similar companies
- Available workforce with degrees in related fields
- Cost of doing business

Select Kentucky Companies

Christian Care Communities, Inc.

First Health Services Corporation

First Source Solutions USA LLC

Kindred Healthcare Operating, Inc.

Pacific Pulmonary Services

Perot Systems – Dell Services

PharMerica Institutional Pharmacy Services LLC

Trover Solutions, Inc.

ZirMed, Inc.



Kentucky Priorities



Kentucky Priorities

Economic development does not result from the efforts or actions of any single person, organization or institution, but rather because of the collective energies of multiple entities working toward consistent and mutually dependent objectives. Since this strategy is intended for the Commonwealth of Kentucky and not just the KCED, it is designed to address various aspects of the state's economic ecosystem in order to maximize the probability of future success.

Achieving the proper balance between these six priorities should be the state's goal. Each goal contributes to the overall strategy's aim of balancing recruitment of new industry with supporting existing industry and nurturing new industry; balancing urban needs and opportunities with rural ones; balancing historically important industries with emerging ones; balancing the traditional image of Kentucky with the contemporary realities; and, balancing the needs for a business-friendly business climate with the needs of future generations of Kentuckians.

These six priorities, along with the associated set of strategies and action items, provide Kentucky with a holistic guide for development. As the plan is implemented, the precise balance between each may vary, but it is important that attention be paid to each since each will impact the state's ability to be successful in the attraction and retention of the strategic targeted business/industry sectors previously outlined, resulting in the creation of jobs for its citizens moving forward.



Kentucky needs to focus on the following six priorities and related strategies, which are not listed in order of importance.

Continue to Create a More Competitive Business Climate

1. Continue to Strengthen Partnerships
2. Assess/Improve Incentive Programs to Support Business/Industry Targets
3. Evaluate Competitiveness of Existing Taxes/Regulations
4. Embrace Regionalism

Attract, Develop, and Retain Business

1. Increase Global Direct Investment Efforts
2. Increase Human Capital by Recruiting/Developing the Workforce of the Future
3. Support Physical Capital by Determining Infrastructure/Site Needs
4. Develop/Implement Statewide Protocols for Supporting Existing Business
5. Support Corporate/Regional Headquarters Recruitment
6. Support Tourism Development and the Arts
7. Support the Military

Create and Market a Powerful Kentucky Brand

1. Define the Kentucky Advantage
2. Take the Lead in State Marketing Efforts
3. Develop a More Aggressive Marketing Campaign

Work Toward Sustainability

1. Develop a Sustainable Agenda for Kentucky
2. Support Renewable Portfolio Standards or Guidelines
3. Encourage Green Building Design/Construction

Foster Innovation and Technology Support

1. Improve Partnerships Between Research Universities and Business/Industry
2. Increase Access to Capital
3. Support R&D Activities

Create an Entrepreneurial Culture

1. Coordinate Entrepreneurial Resources
2. Support Local Entrepreneurial Activities
3. Increase Availability of Entrepreneurial Education



Priority

Continue to Create a More Competitive Business Climate

State economic development organizations should focus on identifying and eliminating any barriers to conducting business in their states. The Commonwealth of Kentucky has already made strides at making its business environment more competitive. In 2005, the Kentucky legislature passed a major tax-modernization initiative which eliminated the corporate license tax and lowered the corporate income tax rate to 6 percent. Such changes helped Kentucky's Business Tax Climate ranking rise faster than any other state since 2009, up 15 spots to 19th in the current rankings on the *2011 State Business Tax Climate Index*. In 2009, Kentucky's business incentives programs were streamlined, reforming existing incentives and creating new ones for new and expanding companies in the state. In addition, Kentucky continues to rank competitively from a business perspective as well. CNBC's 2011 *"Top States for Doing Business"* ranked Kentucky as the state having the 4th lowest cost of doing business.

The strategies and action items are designed to make the Commonwealth of Kentucky even more competitive from a business climate standpoint. This includes strengthening partnerships, improving incentive programs, increasing financial capital availability, evaluating competitiveness of existing taxes/regulations, and embracing regionalism.

STRATEGY 1 CONTINUE TO STRENGTHEN PARTNERSHIPS

Action Item: Add a "Partners" section to the KCED website

The current KCED website does not appear to have a "partners" section, which lists all KCED partner organizations. In order to truly define the partners of the KCED, a section listing its partners with links to their websites should be provided.

Action Item: Coordinate with other Cabinets and partner organizations

It is important that the KCED, other Cabinets and other economic development partners continue to work together to create the most competitive business environment possible in the Commonwealth of Kentucky. As part of the implementation process, it is critical that these organizations are involved in the areas that affect them or in which they can play a critical role in ensuring that the strategy is brought to fruition. This will be discussed and outlined further during the implementation process.

STRATEGY 2 ASSESS/IMPROVE INCENTIVE PROGRAMS TO SUPPORT BUSINESS/INDUSTRY TARGETS

Action Item: Conduct an assessment of Kentucky's incentive programs

Incentives are a critical component of maintaining a competitive business climate, and state and local governments continue to be more aggressive in the incentives they offer for certain projects. Although there have been some recent improvements to Kentucky's incentive



programs, there still appears to be a need to evaluate the competitiveness of these programs versus competitor states. BSA understands that such a study has been approved by the legislature, and has just begun. In addition to evaluating Kentucky versus its competitor states, such an assessment should also consider whether current programs meet the needs of the newly identified targeted business/industry sectors for the Commonwealth.

Action Item: Request an increase in cash funding to support targeted projects

Many states today have project closing funds that are utilized to persuade certain high-impact competitive projects to locate or expand in the state. Some of these “closing funds” are discretionary monies funded by general and special state revenues, with most of them funded annually by legislative appropriation. Most of these funds range from \$5 million to \$50 million but some are \$100 million plus. Although Kentucky was a pioneer in offering withholding incentives (or wage assessments) to certain qualifying projects, it does not have a formal closing fund. The Economic Development Bond (EDB) Program does allow bond funded grants to be used for “extraordinary project financing not covered with other funds, and there is also an option for “advance disbursement” or cash up-front for KBI or KEIA projects meeting certain requirements.

Kentucky should seek to increase the amount of funding under the EDB program to allow it to be more competitive for certain high-impact economic development projects.

STRATEGY 3 EVALUATE COMPETITIVENESS OF EXISTING TAXES/REGULATIONS

Action Item: Communicate current rankings

On the *2011 State Business Tax Climate Index* prepared by The Tax Foundation on how state tax systems compare, Kentucky’s ranking of 19th on the *2011 State Business Tax Climate Index* is higher than the majority of its competitor states including Mississippi (21st), Illinois (23rd), South Carolina (24th), Georgia (25th), Tennessee (27th), Alabama (28th), West Virginia (37th), North Carolina (41st), and Ohio (46th).

Although the KCED has communicated the current ranking, there appears to be a need to get the message out even more focusing on the fact that Kentucky outpaced its competitor states from a business tax perspective (it only ranks lower than Indiana (10th), Virginia (12th), and Missouri (16th)). The target of this effort should primarily be business/industry currently located in Kentucky or those considering a new location in the state.

Action Item: Consider modifications to inventory tax

An estimated 13 states currently impose an inventory tax at the state level, including Kentucky. However, the majority of competitor states do not have a state-level inventory tax including: Alabama, Georgia, Indiana, Illinois, North Carolina, Missouri, South Carolina, Tennessee, and Virginia.

Personal property taxes on inventory create a disincentive for companies to grow by acquiring more inventory. In Kentucky, some types of



inventory are exempt by law, while others are not, creating unequal treatment. This includes a tax that affects one of Kentucky's largest, oldest, and fastest growing industries, the distilling industry, which employs nearly 10,000 with an annual payroll of \$442 million. The personal property tax on inventory is levied every year on aging barrels full of bourbon in warehouses and is not assessed on any other alcoholic beverage such as beer, vodka, or Scotch whiskey.

The Kentucky Chamber supports repealing or phasing out the remaining property tax on business inventory. This phase-out approach was taken by Indiana beginning in 2002 and ending in 2006, while the state of Georgia completely eliminated its inventory tax beginning in 2011. The distillery industry in Kentucky supports a corporate tax credit that would offset the amount of inventory taxes paid each year but would require the distilleries to reinvest the credit in their Kentucky operations.

To be more competitive for new location projects, Kentucky should consider repealing or phasing out the remaining property tax on business inventory. Alternatively, it should at least consider some type of credit against the inventory tax to support the existing distillery industry in the state.

Action Item: Support and review funding for incentives at the local level

Review the ability of Kentucky communities to use local taxes to fund economic development projects, and support the ability of them to do so.

STRATEGY 4 EMBRACE REGIONALISM

Action Item: Explore ways to encourage regionalism

Economic development has changed a great deal over the last several decades with the economy increasingly defined by a global market. From a competitiveness perspective, probably no single strategy has become more important than thinking and acting regionally. Many rural leaders grappling with economic decline have realized that by forming regional alliances, they can pool resources and create the critical mass necessary to develop and implement new economic development strategies. Many states today are supporting a regional approach to economic development.

Regionalism is clearly the trend in economic development and there are already several active regional organizations in Kentucky. Regionalism should be encouraged in the state and the existing regional efforts supported.



Priority

Attract, Develop, and Retain Business

The Commonwealth of Kentucky has enjoyed a great deal of success. As the home to nine Fortune 1,000 companies and 82 announced new locations since January 2010, the state is clearly doing many things right. However, in the competitive market of today, it is necessary to continually seek better methods in order to maintain success.

The recommended strategies in this section are based on findings throughout this project and are focused on ensuring that Kentucky continues to thrive and successfully recruit companies in the strategic business/industry targets identified for the state. Strategies and action items address such areas as global direct investment, workforce and training needs, improving infrastructure, supporting existing business and industry, attracting corporate and regional headquarters, supporting tourism development and the arts, and the military.

STRATEGY 1 INCREASE GLOBAL DIRECT INVESTMENT (GDI) EFFORTS

Action Item: Implement a Visitation and Contact Program

A Visitation and Contact Program should be approached as a subset of an existing industry retention program focused primarily on foreign-owned companies. Working with Kentucky-based international company representatives will be far more efficient and should result in Kentucky securing more than its fair share of expansions. In addition, these visits will contribute to the development of a network of contacts that will lead to additional business intelligence related to the country's connection to the targeted sectors.

New statistics show that U.S. operations of global companies are reinvesting what they earn back into their U.S. plants and factories, with reinvested earnings tripling from \$28.5 billion in 2009 to \$93.1 billion in 2010. This effort will ensure that the companies currently operating in Kentucky are aware that the state values their presence and share that sentiment up their chain of command. As such, not only should this effort result in more GDI expansions, it should also result in new greenfield project leads emanating from the home country of the existing company.

Action Item: Proactively implement a lead generation, sales, and marketing campaign in select countries

Kentucky is home to nearly 400 international companies that represent 30 countries. The KCED currently operates international offices in Japan, Mexico, China, and Germany to assist in promoting direct investment to the Commonwealth, as well as to increase trade between Kentucky companies and other countries.



Since the resources are not available to operate proactively in all countries of opportunity, Kentucky must reduce its list to a small group of countries that provide the highest likelihood of success. These countries should include: Canada, Germany, and Japan, which are traditional markets for GDI in the U.S., and emerging markets such as China, India and Brazil. The KCED already has offices in Germany, Japan, and China. It also has an office in Mexico, which mainly focuses on trade development. The KCED should consider adding offices in Canada, India, and potentially Brazil over the next five years.

Action Item: Capitalize on nearshoring opportunities

Nearshoring involves the relocation of manufacturing production to countries that provide less expensive production processes and are closer to the end consumer. Many experts believe that nearshoring offers the potential for a mass return of jobs from overseas to the North American market. A recent study from the Boston Consulting Group predicts an estimated three million jobs will return to the U.S. due to the rising cost of production in China, the rising cost of transportation and the improved efficiency and productivity in the U.S. and Europe. The KCED should explore the opportunity to recruit companies from overseas to Kentucky.

STRATEGY 2 INCREASE HUMAN CAPITAL BY RECRUITING/DEVELOPING THE WORKFORCE OF THE FUTURE

Action Item: Develop and implement a strategy to attract Kentucky alumni with specific skill sets back to the state

Kentucky should consider implementing a program focused on building a database of past college graduates of Kentucky institutions to make them aware of quality job opportunities in the Commonwealth. This effort could focus on graduates with engineering, technology or other identified skills that are needed in the state. The overall goal would be to build a substantial database of Kentuckians and Kentucky alums with needed skills in the state that would be interested in moving back to Kentucky for the right job opportunity. In addition, the program should also focus on attracting business operations whose decision makers are Kentucky college alums.

Possibly the best way to approach this is to work with the eight public universities in the state on marketing to their alumni list.

Action Item: Determine and address education, workforce, and training needs

In order to ensure the workforce in Kentucky has the skills and training needed, it is important to review the workforce skills and needs of the targeted business sectors. Each of the targeted sectors should be reviewed to determine the type of workforce skills, educational programs, and training programs needed, as well as the sufficiency of the existing workforce to meet the needs of the sector. In addition, the availability of educational degree or certification programs in Kentucky must be assessed.

The KCED may want to consider partnering with the Kentucky Workforce Investment Board (KWIB) in conducting the assessment of the workforce and educational capabilities in Kentucky related to meeting the needs for each targeted sector. The KCED'S BlueGrass State Skills Corporation may also want to assess the training capabilities available related to each targeted business/industry sector.



STRATEGY 3 SUPPORT PHYSICAL CAPITAL BY DETERMINING INFRASTRUCTURE/SITE NEEDS

Action Item: Establish broadband internet access across the state

In order to be competitive from a site location and technological standpoint, broadband access must be available and should be a critical component of any state economic development program. The Federal Communications Commission (FCC), as quoted below in its 2010 National Broadband Plan to Congress, called for 90 percent of U.S. homes to have broadband access by 2020, which would be a 30 percent increase from current estimates.

Information from the FCC indicates Kentucky has broadband available to 99.2 percent of the urban population, which is on par with the national average, and 81.9 percent of the rural population, which is above the national average of 79.3 percent. However, according to the U.S. Department of Commerce's "Exploring the Digital Divide" report, Kentucky ranks near the bottom of states in the percentage of households using broadband connections and 43rd for speed availability. The state is making great strides to improve these statistics through use of more than \$300 million in federal grants to expand broadband access in rural America. As a result, rural residents in 71 of Kentucky's 120 counties received new and/or improved broadband service. Kentucky also leads the nation in USDA Recovery Act broadband investment.

"Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life."

-Internet Innovation Alliance

Kentucky should continue to work to improve broadband internet access in rural areas of the state, should consider launching an educational campaign to increase the number of households that utilize broadband connections, and work to address the speed availability throughout the state.

Action Item: Develop river site certification program

The availability of buildings and sites ready for development is one of the key driving factors in most location searches. If a state or location does not show that it has an available potential site or building that fits a particular project, it will be eliminated early in the location search without any consideration. The KCED has an online sites and buildings database that as of October 2011 has more than 200 pre-screened "shovel-ready sites." While this information is critical to companies searching for a new location, Kentucky has not fully taken advantage of marketing the river sites available across the state.

There are currently 10 "shovel-ready" sites with river access (property is adjacent to a navigable river) in Kentucky. Those sites must be properly marketed, and additional sites should be identified and assessed. A River Site Certification program would accomplish both of these items.

If marketed properly a River Site Certification program, would provide Kentucky with an advantage over many of its competitor states of the presence of riverfront sites that many business/industry sectors search for when seeking a new location. Identified Kentucky targets,

including distribution/logistics, value added agriculture/beverage products, bioenergy, solar and wind component manufacturing, may need to be located near a river site. In addition, a River Site Certification program may create more opportunity for major steel and chemical manufacturing projects, which often want to be located close to water.

Note that the Duke Energy Site Readiness Program may be available to some of the communities in Northern Kentucky.

STRATEGY 4 DEVELOP/IMPLEMENT STATEWIDE PROTOCOLS FOR SUPPORTING EXISTING BUSINESS

Action Item: Support local communities/regions in BR&E efforts

Local/regional economic development organizations should have the ultimate responsibility for implementing and managing effective business retention and expansion efforts, but the KCED should have programs in place to support and encourage consistency in efforts across the Commonwealth.

KCED should consider partnering with AEP Kentucky Power, LG&E Energy Corporation (or its subsidiaries Kentucky Utilities Company or Louisville Gas and Electric Co.), Duke Energy, and TVA to develop a statewide existing industry program to be implemented at the local level with a focus on ensuring that key local business/industry are identified and visited annually by the appropriate local contact.

STRATEGY 5 SUPPORT CORPORATE/REGIONAL HEADQUARTERS RECRUITMENT

Action Item: Make headquarters/regional headquarters retention and recruitment a focus area of the KCED

The majority of the existing headquarters in Kentucky, as well as recent locations and expansions, were in Louisville or Lexington, but other areas of the state such as Northern Kentucky and other fast-growing cities in the state should also focus some efforts on corporate/regional headquarters retention and attraction. While national headquarters relocations of major firms are relatively rare and difficult to capture, recent successes in Kentucky and the benefits of such locations make this a viable focus effort.

Virginia is a state that actively targets corporate headquarters recruitment and has a Business Development Manager focused just on corporate headquarters recruitment. A separate webpage explains why Virginia is the best place for corporate headquarters and includes information about air transportation, workforce, educational attainment, recent announcements, and state rankings.

Although not included as a specific target for the Commonwealth of Kentucky, showing a focus at the state level on corporate/regional headquarters recruitment sends the right message to both existing

Location Criteria Corporate/Regional Headquarters

- Existing Headquarters Presence
- Size of City
- Growth Rate of City
- Cost of Doing Business
- Educational Attainment
- Ability to Locate, Attract and Retain Employees
- Airport Access
- Cost of Living
- Professional Services Availability
- Overall Quality of Place



headquarters in the state and potential new headquarters that Kentucky wants to meet their needs. It also supports the efforts of Louisville, Lexington, Northern Kentucky and others that are focusing on retaining or attracting corporate or regional headquarters. The KCED should list headquarters/regional headquarters as a priority focus area on its website along with the list other targets. There should be a specific page that outlines the strengths of Kentucky from a corporate headquarters perspective and that is updated regularly to reflect location and expansion successes throughout the state.

Action Item: Review existing incentive programs to ensure needs of corporate/regional headquarters are met
Corporate/regional headquarters are eligible for the Kentucky Business Investment Program. However, there are at least six states that offer incentive programs targeted specifically to corporate headquarters. Tennessee, in addition to an income tax credit, offers a refund on sales tax liability, as well as a credit against franchise and excise tax based on the amount of relocation expenses incurred. Indiana, Mississippi, South Carolina, Tennessee, West Virginia, and Virginia offer tax credits to offset relocation costs based on the number of jobs the company creates and/or capital investment made in the state. Kentucky should consider incentive programs in other states that are specifically targeted to corporate headquarters and determine whether it should adopt more tailored incentives to support this sector.

STRATEGY 6 SUPPORT TOURISM DEVELOPMENT AND THE ARTS

Action Item: Support future development of the wine and bourbon industry

The Kentucky Tourism, Arts & Heritage Cabinet is doing a good job of supporting the wine and bourbon sectors from a tourism standpoint. Due to the existing and potential impact of both the wine and bourbon industry in Kentucky long-term, the KCED should ensure that both are also supported from a business perspective and any business issues they face are addressed. The issue with property tax on business inventory has impacted the bourbon industry and could similarly affect the wine industry. The KCED should support changes to this law to support these sectors.

Related to specifically growing the wine industry in Kentucky, the KCED should work with the Kentucky Tourism, Arts & Heritage Cabinet and the Kentucky Vineyard Assistance Program to explore the possibility of developing a technical certificate in viticulture at one of the state institutions of higher education that would allow students to demonstrate the application of specific agricultural knowledge and techniques to improve vineyard health.

Action Item: Support tourism development in Eastern Kentucky

With the Appalachian Mountains, national parks, the Daniel Boone National Forest, rivers, and miles of hiking trails, adventure tourism is a focus in Eastern Kentucky. In August 2011, it was announced that a former railroad line will become a new trail for hikers, cyclists, and horseback riding.

While East Tennessee, which has the Smoky Mountains and Appalachian Trail, as well as a variety of tourist attractions, has been very successful from a tourism development perspective, Eastern Kentucky has not yet attracted a major tourist attraction. KCED should work



with the Kentucky Tourism, Arts & Heritage Cabinet to support tourism development as a potential wealth creating engine in Eastern Kentucky focusing on the development of a major tourist attraction in the region.

Action Item Support arts education

As part of a Sustainable Agenda, the Tourism, Arts and Heritage Cabinet should consider supporting funding for arts education in public schools, working with the Kentucky Education Cabinet. Studies have shown exposure to arts education equips students with a unique set of critical thinking, innovative and creative skills they would be unlikely to develop elsewhere during their educational career.

STRATEGY 7 SUPPORT THE MILITARY

Action Item: Continue working with the Kentucky Commission on Military Affairs

The military is a major employer in Kentucky and has a significant economic impact on the state with the presence of Fort Campbell and Fort Knox, as well as the Blue Grass Army Depot, the U.S. Army Corps of Engineers and other military units. The KCED should continue to partner and work with the Kentucky Commission on Military Affairs to determine any military-related job creation opportunities, as well as opportunities to find employment for military personnel returning from active duty.

Action Item: Partner with the Kentucky National Guard

The Kentucky National Guard has an Employment Initiative Campaign focused on assisting national guardsmen and women and their spouses with obtaining employment in the state. The KCED should partner with the Kentucky National Guard on this initiative and may want to consider offering specific assistance in the area of entrepreneurship through the Small Business Services Division.



Priority

Create and Market a Powerful Kentucky Brand

Aggressive marketing and communications are critical functions of any effective economic development effort. In fact, product promotion may be the most important function of today's economic development organizations. It is critical that marketing tactics are used to communicate Kentucky's strengths to both internal and external audiences who impact the state's economic development future.

The KCED currently has a comprehensive marketing and communications effort in place that includes paid advertising, media relations, special events, sponsorships, and electronic media tactics. This plan recommends some additional strategies to incorporate into existing efforts, particularly as it relates to marketing the state as a prime location for companies in each of the targeted industry sectors.

The KCED has a variety of partners that support business development and marketing efforts. A coordinated effort, with the KCED assuming a leadership role, will ensure the most "bang for the buck" in enhancing awareness of Kentucky and its assets.

The ideas in this section are not intended to represent a comprehensive marketing program. Instead, they are recommendations that will supplement and enhance existing marketing activities for Kentucky. The recommendations were developed based on research completed for this project and are intended to provide support to key programs of the KCED. In order to change misperceptions that people may have about Kentucky, an increase in external marketing may be required. However, consideration was given to existing resources – both staffing and funding – in developing these recommendations.

STRATEGY 1 DEFINE THE KENTUCKY ADVANTAGE

Action Item: Develop and adopt key messages

To communicate effectively with the identified target audiences, it is important to develop a core group of concise, clearly defined key messages that will guide all communications initiatives. These messages will serve as a framework to convey the benefits of Kentucky as a business location in all facets of marketing and communications.

The messages need to convey what differentiates Kentucky from its competitors – underscoring the fact that the Commonwealth is a prime and unique location for businesses to locate, relocate, or grow. Points to consider in developing key messages include infrastructure, product, workforce, education, quality of place, and business climate.



In addition to key messages, Kentucky should also strengthen its branding by using a “boilerplate” description of the state in most print materials. This description should include the most critical points of the key messages and should be no more than two sentences – something brief and memorable.

Action Item: Define the short- and long-term vision for Kentucky

A series of visioning sessions held with both internal and external stakeholders throughout Kentucky served as a key component in the research to develop this strategic plan. KCED staff, as well as community leaders and citizens in each region were given an opportunity to discuss their ideas related to a vision for Kentucky’s future economic development efforts. Participants were asked to consider the following issues, among others:

- How to enhance Kentucky’s economic development efforts with unlimited resources and expertise;
- What Kentucky would accomplish by 2016 in an ideal world;
- Programs and initiatives of other states that Kentucky should emulate; and
- What would be happening if Kentucky fulfilled its economic development potential?

The feedback gathered through the visioning session process should be used as the basis for defining the short- and long-term vision for Kentucky from an economic development perspective. This might result in development of a vision statement to guide the KCED in the coming years.

Action Item: Educate influencers on the realities of right-to-work in Kentucky

A right-to-work law secures the right of employees to decide whether or not to join or financially support a union. Kentucky, unlike its competitors to the South, is not a right-to-work state. Yet, the percentage of Kentucky workers that are union members at 8.6 percent is lower than the national average of 12.3 percent (as of 2009) and the majority of its surrounding states. In addition, Kentucky’s union membership decreased 28 percent between 2000 and 2009, compared to the national average decline of 9 percent during the same period. Only 4.1 percent of the facilities locating in Kentucky since 2000 are unionized and the majority of unionized Kentucky facilities are a result of a national contract.

KCED must have available key messages that clarify the misconceptions about the label “right-to-work” and what it means for Kentucky. These messages should be made available to regional and local economic development professionals across the Commonwealth. Additionally, these messages should be proactively communicated to target influencers such as consultants and company executives.

Vision Statement Development

- A vision should express values, purpose, and progress toward a better future.
- It should be neither too specific nor too general.
- Detailed goals do not belong in the vision itself.
- The statement should be clear and compelling, aspirational for a better future, and describable in simple terms.
- It should be capable of being understood as a common purpose.



Action Item: Include target profiles on the KCED website

The identified targets for Kentucky should appear on the KCED website, as well as the individual profiles for each highlighting the niche sectors as well as the Kentucky advantage for each target. The profiles should be available in a downloadable format to a PDF document so that regional and local economic developers across the state can utilize them.

STRATEGY 2 TAKE THE LEAD IN STATE MARKETING EFFORTS

Action Item: Accelerate Kentucky United Efforts

Kentucky United is a public-private partnership focused on promoting Kentucky to companies, site location consultants, brokers, and others as a great place to do business. The KCED currently provides financial support to Kentucky United, and many communities throughout the state also participate in the program and its special events. However, some of the state's largest communities do not participate in the effort.

As the state's lead economic development agency, KCED should take more of a role in enhancing the site consultant marketing efforts and events that comprise the Kentucky United program. Hopefully, with the KCED's involvement, the larger communities that are not currently participating will become more involved in Kentucky United efforts.

The KCED should partner with the Kentucky Association for Economic Development (KAED) in the planning and execution of hosting events in select key geographic markets where there is a concentration and combination of three prospect groups – headquarters of existing companies, site selection consultants, and offices or facilities of targeted companies.

Action Item: Establish a Regional Marketing Grant Program

Regional economic development organizations are critical economic drivers in Kentucky. A marketing grant program could be established to assist regions in business retention, expansion, creation, and recruitment.

This program could be designed to assist in aligning the KCED marketing and branding efforts with regional programs to attract new businesses and increase economic development activity. The program should designate a maximum grant amount and require regional organizations to match the grant amount dollar-for-dollar. Marketing programs funded through these grants should align with the KCED's brand strategy, while at the same time allowing regional organizations to be innovative and unique in promoting the regions' strengths and assets.

STRATEGY 3 DEVELOP A MORE AGGRESSIVE MARKETING CAMPAIGN

Action Item: Explore increasing the Cabinet's marketing budget

A very important goal of this plan is to ensure that limited resources of the KCED are more efficiently allocated to critical economic development activities. However, the KCED marketing budget of \$500,000 per year is not at a level to allow the Commonwealth to be



competitive in enhancing the perception of Kentucky among key decision makers. While determining the economic development marketing budgets of competitor states is difficult, several stakeholders mentioned Michigan as an example of aggressive economic development marketing. The campaign they referenced, Pure Michigan, was originally funded at \$30 million. Although at the time, it primarily focused on a tourism message, it has recently been expanded to be the state's economic development marketing campaign, which will be funded at \$10 million. Michigan's spending at this level has set a very high bar, and other states are looking to increase their marketing budgets over time.

Based on this information and BSA's experience in economic development marketing, it is recommended that the KCED begin efforts over the next three to five years, to seek to increase the marketing budget to a minimum of \$1.5 million. This increase could potentially be funded through a public/private partnership.

Action Item: Enhance social media efforts

The KCED has begun efforts to develop a social media presence, which is becoming an increasingly important component of economic development marketing. Following are some recommendations to enhance these efforts and increase the number of "followers" the KCED has:

- Add social media "follow us" buttons to marketing e-mails and electronic newsletters.
- Encourage all employees and partners to follow the KCED in all social media platforms, which will in turn expose their personal networks to the Cabinet pages. Also suggest they use the "share" button on the KCED Facebook page to share content with their personal networks.
- Develop a dedicated approach to using LinkedIn for business development prospecting by joining industry groups for economic development, as well as within the targeted industry sectors, by responding to posted questions in areas of staff expertise, and by connecting with site location consultants and other economic development decision makers.
- Optimize tweets, Facebook posts, and LinkedIn status updates with key words that will help the KCED and Kentucky Economic Development show up in search results.

Action Item: Drive traffic to the website

The ThinkKentucky.com website is among the best of state economic development agencies in terms of both its content and its architecture. The next step to enhancing the website is to drive more traffic to it. Some of the ideas in the previous action item could also be applied to website traffic – ensuring that the ThinkKentucky.com link is included in all electronic communications, on all social media sites, etc. However, search engine optimization is perhaps the most direct and aggressive method of increasing site visits. Optimizing a website may involve editing its content and HTML to both increase its relevance to specific key words and to remove barriers to the indexing activities of search engines. Using these tools will help improve the frequency and the ranking of the ThinkKentucky.com content in search results, thereby encouraging more visits to the site.



Priority

Work Toward Sustainability

Sustainability, according to the United Nations World Commission on Environment and Development, can be most simply defined as the ability to meet our needs without compromising the ability of future generations to meet their own needs. Developing a sustainable agenda for the Commonwealth of Kentucky is important to preserving and enhancing qualities of the state that are important to its residents as well as supporting green building and design, and the development and use of renewable energy. In addition, many corporate location projects today are considering sustainable practices in their location decisions, particularly those involved with the development or support of alternative energy and solar and wind support manufacturers, all of which are designated targets for Kentucky. Other Kentucky targets that may want to locate in a sustainable state include energy-efficient lighting and sustainable packaging manufacturers, as well as any other sector that practices sustainability internally.

Kentucky has several statewide, community and university-based programs and initiatives that are related to sustainability. In addition, Governor Beshear's strategic energy action plan titled *Intelligent Energy Choices for Kentucky's Future* addresses sustainability by increasing the use of renewable energy sources, improving energy efficiency, developing cleaner methods to utilize fossil energy resources, diversifying the state's electricity and transportation energy portfolios, and better integrating the agricultural and energy economies. Increasing a state's use of renewable energy is important because it encourages job creation, energy security, cleaner air, and market demand for renewable and clean energy supplies. Many states have adopted Renewable Portfolio Standards (RPS) and Alternative Energy Portfolio Standards (AEPS) goals or requirements as part of this effort, which gives states a standard designating the amount of electricity utility companies must generate from renewable or alternative energy sources by a given date. As of October 2011, 27 states plus the District of Columbia had enacted RPS requirements; four states have an AEPS requirement; and another seven had RPS or AEPS goals for a total of 38 states. While Kentucky does not have RPS/AEPS requirements or goals, six border states (Missouri, Illinois, Indiana, Ohio, West Virginia, and Virginia) have such programs in place. North Carolina is another competitor state of Kentucky that has an RPS in place.

Leadership in Energy and Environmental Design (LEED) is an internationally recognized green building certification system developed and administered by the U.S. Green Building Council (USGBC). As of October 21, 2011, there were 44 LEED certified facilities in Kentucky, and another 154 projects registered for certification. Kentucky currently ranks 32nd overall in the number of LEED certified facilities. Kentucky has two programs in place which support construction of LEED certified facilities. In 2010, Governor Beshear signed legislation which supports and encourages the construction and renovation of school buildings using efficient design concepts that meet defined certification requirements. In 2009, Governor Beshear signed legislation requiring all new public facilities and renovations using 50 percent or more of state funding to achieve LEED certification. The below recommendations are designed to amplify and coordinate the efforts currently



underway.

STRATEGY 1 DEVELOP A SUSTAINABLE AGENDA FOR KENTUCKY

Action Item: Create a statewide initiative focused on sustainability

The development of the Sustainable Agenda for Kentucky should be led by the Kentucky Energy and Environment Cabinet and KCED, but may ultimately be in the hands of the legislature.

STRATEGY 2 SUPPORT RENEWABLE PORTFOLIO STANDARDS OR GUIDELINES

Action Item: Implement a Renewable Portfolio Standard or goal for Kentucky

If Kentucky is going to become a leader in the renewable energy sector and attract producers of bioenergy, as well as solar and wind component manufacturers, it will need to continue the planning process and consider the adoption of a RPS or AEPS requirement or goal.

STRATEGY 3 ENCOURAGE GREEN BUILDING DESIGN/CONSTRUCTION

Action Item: Consider LEED or other incentives for private business/industry

Most state legislation passed to date specifies all government-owned or funded buildings be LEED certified, and some states also have tax credits and other incentives that apply to private business and industry obtaining LEED certification for their project. Kentucky should explore creation of an incentive or tax credit to offset part of the costs for developers to certify buildings as LEED Gold or higher, or another comparable level using the Green Globes or ENERGY STAR qualification systems. Such tax credits or incentives have the potential to increase the number of LEED or other certified green projects in Kentucky and also provides further support to the Renewable Energy, Energy-Efficient Lighting and Sustainable Packaging sectors, which are targeted sectors of Kentucky.

Action Item: Consider LEED or other certified incentives for historic buildings

According to the National Trust for Historic Preservation, the conservation and improvement of existing historic buildings, including the re-use of historic and older buildings, greening existing buildings, and reinvesting in older and historic communities, is an important component to sustainability efforts. The Tourism, Arts and Heritage Cabinet should consider encouraging renovation, restoration, and retrofitting of historic buildings using LEED, Green Globes, ENERGY STAR or other similar qualification systems.



Priority

Foster Innovation and Technology

As the recruitment of projects and jobs becomes more difficult and expensive, Kentucky must enhance its efforts to build an internal infrastructure to foster the organic growth of its own local companies. Kentucky has several established programs and efforts that acknowledge the importance of innovation and commercialization of homegrown technology, but these efforts appear to be underfunded, underappreciated and underutilized.

Kentucky's current programs to support innovation-based companies are delivered by two entities – the Cabinet's Office of Commercialization and Innovation (OCI) and the Kentucky Science and Technology Corporation (KSTC). Some of these programs, such as the SBIR/STTR Matching Fund Program, are recognized successful models, while others may need some modification to better address the needs of the constituents they are designed to serve.

Creating wealth and jobs through fostering innovation and commercialization requires the establishment of a closely knit array of knowledge, skills, money, programs, and services. It begins with the development of human capital through an effective K-12 education system and continues with quality university education, particularly in the Science, Technology, Engineering and Mathematics disciplines.

The intellectual property generated as a result of the investment in education, must then be supported through an array of funding vehicles that address the various stages of an idea's development from conception to commercialization and on into the growth cycle of the company. As the life cycle of the idea matures, the support and funding typically evolves from the public sector to the private sector, with some programs and policies being used to facilitate the transition.

The strategies and action items outlined below will support and enhance additional R&D activities in Kentucky. There are, however, some additional initiatives that are designed to better integrate the R&D in the state with the economic development efforts of the KCED that will hopefully result in additional improvement in Kentucky's ranking from an R&D expenditure and patent perspective.

STRATEGY 1 IMPROVE PARTNERSHIPS BETWEEN RESEARCH UNIVERSITIES AND BUSINESS/INDUSTRY

Action Item: Inventory the private sector and university research base

Much research is done within companies and off the university campuses. It would therefore be beneficial for the OCI and/or KSTC to conduct a survey of Kentucky companies to determine the type of research taking place at their Kentucky operations. The survey should not



only ask what research is being done onsite, but what research the company would like to see take place, either at their facility or through partnership with a university in Kentucky. An inventory of the university research activities should also be part of this review. An outside consultant or consultants may need to be hired to conduct this survey and analyze the results.

Action Item: Enhance commercialization and technology transfer capabilities through more collaboration

Although research in and of itself greatly contributes to the state's economy, it is when the research conducted in the state's universities is applied commercially by companies located in the state that its full potential is realized. Typically, university-based faculty and corporate-based engineers live in very different worlds driven by very different demands. These two groups do not always naturally come together and see their common ground and purpose. Acting as an intermediary, the state can do several things to facilitate the connectivity between the university-based research faculty and the companies of Kentucky.

Kentucky should seek to bolster its research universities' capacity to innovate and develop patentable breakthroughs and discoveries, as well as the infrastructure to mine the economic benefits of those advancements. It was noted during the information gathering stage of this project that the engineering faculties at Kentucky's two primary research universities are smaller than that of competitive schools and states. Not only should this and other research deficiencies be addressed, but the state should harmonize the efforts of the Office of Technology Transfer through more collaboration.

Action Item: Develop a statewide Internship Program

Connecting university research with private-sector companies should be the ultimate objective of an innovation-based economic development strategy. One way to accomplish this is through researchers and engineers and another is through students and companies. Kentucky should develop a statewide internship program that places graduate and undergraduate students with innovation-driven companies in their chosen fields of study. Although a program to simply broker internships around the state would be beneficial, providing matching funds to the companies to ensure the internships will be paid will ensure greater participation from the companies as well as the students. The KSTC is already in the process of establishing such a program and it should take the lead.

STRATEGY 2 INCREASE ACCESS TO CAPITAL

Action Item: Continue funding and support for the Kentucky Enterprise Fund, Commonwealth Seed Capital and other similar programs

The Kentucky Enterprise Fund (KEF), the Kentucky New Energy Venture Fund (KNEV), and the Rural Innovation Fund (RIF) provide important sources of funding to early stage companies in the Commonwealth. In addition, the Commonwealth Seed Capital, LLC, (CSC) offers a private funding source to facilitate the commercialization of innovative ideas and technologies.

Continuing these programs is essential to the ongoing success of Kentucky in its efforts to organically grow the jobs of tomorrow from within.



States that do not have such a program are trying to find the political will to create and support them.

Action Item: **Create a Matching Grant Program to support private-public research**

Kentucky has a well-respected SBIR/STTR grant program. While this successful program addresses needs of companies that use these federal programs, it does not reach the many companies that do not. To facilitate and incentivize collaboration with applied research between the private-sector and universities, Kentucky should consider a matching grant program that requires a joint application to be submitted by a principal researcher from a university, along with a Kentucky-based private sector company. For example, a similar program in Florida provides grants from \$20,000 to \$100,000 with the requirement that the company provides two times the state grant towards the research being supported.

Action Item: **Enhance efforts to support second stage companies**

Second-stage companies are considered to be ones that have grown past the start-up phase, but are not yet mature. Whereas small business development centers, innovation centers and incubators typically deal with start-ups and early-stage companies, there is a need for focused, technical programs that search for companies that are on the cusp of growth and need specific assistance to identify their breakthrough strategies.

While the network of Kentucky ICCs and ICs operate on a local and regional level, a statewide initiative should develop a broad-based resource pool of technical assistance, proven CEOs, and entrepreneurs to serve as mentors, and seminar content aimed at specific challenges. With funding, this initiative could be managed by the OCI as an extension of its efforts.

Action Item: **Modify KIFA or create a new state Angel Investment Tax Credit**

More than 20 states, including Kentucky, offer tax credits, most against business or personal income tax, to angel investors in new technology companies and most of those credits have been enacted since 2005. Credit amounts range from 15 percent in Colorado to 100 percent in Hawaii. Some states offer higher credits for investing in rural or economically distressed areas. All but three states limit the total amount of credits available to all investors and most impose an annual or aggregate cap with annual caps ranging from \$750,000 to \$18 million and aggregate caps ranging from \$20 million to \$45 million. Some states limit the amount of investment for which individual investors may claim the credit.

According to a report by the Northern Kentucky Tri-County Economic Development Corporation, KIFA has been underutilized in Kentucky with only 14 percent of the credits utilized in 11 years, and in 2009, only six investments were made under the program. Based on that information, a modification to KIFA or a new program to support angel investment in Kentucky is needed.

The main issue with KIFA appears to be that individual angel investors do not have access to the program. The program requires a certified investment fund have at least four unaffiliated investors. The minimum investment of \$500,000 should also be reduced. If these changes



were made, the KIFA program should be more effective.

STRATEGY 3 SUPPORT R&D ACTIVITIES

Action Item: Create a state R&D Tax Credit

Kentucky currently has a Research Facilities State Income Tax Credit that provides an incentive for companies investing in facilities used to pursue research but does not provide an incentive for the actual amount invested in R&D in the Commonwealth. Many states have R&D tax credits that mirror the Federal R&D tax credit. A recent study conducted by Ernst & Young shows that the Federal R&D tax credit has been a boon to the U.S. economy with the existing credit estimated to increase annual private-research spending by \$10 billion in the short-term and \$22 billion in the long-term.

A state R&D Tax Credit should have similar effects, and as such should be created to supplement the Kentucky Investment Fund Act (KIFA). Although the KIFA is positive and helps create approved investment funds, it does not address individuals or corporations that are investing in R&D outside of approved funds. This new R&D Tax Credit does not need to be at the same 40 percent level provided by the KIFA, so as to still encourage investing via approved funds. The majority of states have an R&D tax credit that ranges from 10 percent to 100 percent of R&D expenditures, with most in the 25 percent to 30 percent range. It is possible to provide one level of credit when the company is conducting 100 percent of the research in-house (15 percent credit), and another level when the company is collaborating with a Kentucky university encouraging more public-private research cooperation (20 percent credit). The credit is also refundable providing companies investing in R&D with an additional incentive. This model should be considered in Kentucky.

Action Item: Fund and support “Bucks for Brains”

When an industry’s production and R&D are co-located, it is better situated to grow and evolve along with the internal and external forces of change. When production is removed from R&D, it is much more likely for that production facility to become dated, inefficient and less productive. The result is the longevity of industries is significantly increased when supplemented with ongoing R&D.

Connecting R&D with industry is the objective of eminent scholar type programs. The presence of preeminent scholars not only supports existing industry, but also serves as a magnet for out-of-state companies wanting to locate close to the type of advanced support such scholars can provide. One example of such a program is the Georgia Research Alliance’s Eminent Scholars Program.

This concept is not new to Kentucky. The Kentucky Postsecondary Education Improvement Act of 1997 created the Strategic Investment and Incentive Funding Program to provide strategic financial incentives to advance postsecondary education. Kentucky’s Endowment Match Program known as “Bucks for Brains” (B4B) was designed to attract top researchers to Kentucky. The program requires that universities match the state funds with donations from corporations, foundations, other nonprofit agencies, and philanthropists. Public and private matched funds are invested and the earnings fund faculty positions, programs, or scholarships. From 1997 to 2007, the state of Kentucky invested over \$350 million in the B4B program.



The University of Kentucky (UK) and the University of Louisville (U of L) received state B4B funds through the Research Challenge Trust Fund, while funding for the other comprehensive universities is appropriated through the Regional University Excellence Fund. Since the program's inception, U of L has received more than \$99 million in state funds to match private contributions, bringing the total Bucks for Brains investment to more than \$198 million as of 2008. U of L has also been able to increase the number of endowed faculty from 25 to 133.

At UK, more than 12,000 donors have donated gifts qualifying for approximately \$230 million in matching funds, resulting in more than 78 endowed chairs.

However, even with all of its reported success, the B4B program has still experienced state cutbacks, with no funding received for the 2004-06 and 2006-08 biennium budgets and \$60 million received for the 2008-10 budget, which was half of the 2002-04 allocation.

More funding is needed for B4B. Once the survey/study is complete identifying the research needs of companies and the research capabilities at universities (recommended previously), the types of eminent scholars needed should be identified. Due to the existing strength of the automotive industry in Kentucky and the fact automotive R&D is a designated target, one or more scholars should be considered in that area.

Action Item: Create Centers of Excellence

As Kentucky increases its focus on specific targeted industries, it should begin building greater research and academic support for these sectors. Whether through initiatives like the Eminent Scholar Program or through incremental prioritization of resources, Kentucky should begin the process of creating intellectual capacity in the industries that will provide the jobs moving forward in the 21st Century. Although these Centers should have a physical location and be tied to a particular university or community college, they should also be collaborative through a network of partnerships with other universities and community colleges involved in the same discipline.

Kentucky has a number of existing R&D centers that could be branded as a Center of Excellence. These should be reviewed and others created potentially based on targeted sectors.



Priority

Create an Entrepreneurial Culture

An entrepreneur may be best defined as “one who organizes, manages and assumes the risks of a business or enterprise.” The role of entrepreneurship and the importance of development of an entrepreneurial culture in economic development has often been underestimated. Over the years, however, it has become increasingly apparent that entrepreneurship does indeed contribute to economic development. Transforming ideas into economic opportunities is the crux of entrepreneurship. History shows that economic progress has been significantly advanced by pragmatic people who are entrepreneurial and innovative, able to exploit opportunities, and willing to take risks.

Kentucky has a wide variety of programs to encourage and support entrepreneurs and small business. However, it appears that many of these offerings operate in a silo, without consideration for how they might interface with and coordinate with other programs. A coordination of programs for entrepreneurs will help avoid duplication, maximize available resources, and ensure that all needs are addressed.

Creating entrepreneurial communities is a concept that recognizes the role communities can play in supporting entrepreneurs. Economic development and community development are two sides of the same coin, and communities that offer an entrepreneurial culture are much more likely to be successful in overall economic development activities.

Entrepreneurship education is also a potentially important component of creating an entrepreneurial culture. Many political leaders and educators believe that fostering an entrepreneurial culture through education will prepare youth and adults for success in an entrepreneurial economy. Entrepreneurship education can start as early as elementary school and progress through all levels of education.

STRATEGY 1 COORDINATE ENTREPRENEURIAL RESOURCES

Action Item: Conduct inventory of entrepreneurial assets

It is recommended that KCED and any appropriate partners conduct an inventory of entrepreneurial assets and resources to begin developing an understanding of the assistance available to entrepreneurs and to identify any gaps in services that may need to be addressed. This inventory should consider programs offered by government entities, institutions of higher education, non-profit organizations, and private individuals. In addition to understanding the programs and services offered, the inventory should also consider what resources are utilized to support the programs, which programs are underutilized, and what uncommitted resources may be available to support additional offerings.



Action Item: Align assets and develop more coordinated effort

Once the above described inventory is completed, KCED with other organizations should bring all entrepreneurial support organizations together to begin better coordinating these efforts. Obviously, increased coordination will lead to greater efficiency for all participants, but it is important to ensure that all groups are aware of the overall vision for an entrepreneurial culture in the Commonwealth. KCED can assist the groups in determining that vision and how they can all best support it in the most coordinated and efficient way possible.

STRATEGY 2 SUPPORT LOCAL ENTREPRENEURIAL ACTIVITIES

Action Item: Develop a Certified Entrepreneurial Community Program

Just as companies locate in communities, not states, entrepreneurs seek communities that are supportive of their efforts. A Certified Entrepreneurial Community Program would provide the framework to allow Kentucky communities to be better prepared to support and develop entrepreneurial businesses. This initiative may best be led by the Department for Local Government.

Action Item: Market the entrepreneurial program across the state

Once Kentucky officials determine the components of an Entrepreneurial Community Program, the Department for Local Government should initiate a marketing campaign with the goal to enhance community understanding of the role of local leaders in developing entrepreneurship programs. These marketing activities will highlight the importance of entrepreneurship in a local economic development effort and will provide communities with information about the tools available to them to assist in developing a stronger entrepreneurial culture.

This marketing effort might include media coverage, meetings with local leaders to discuss the program, presentations to civic groups that would support the program, and engagement with local entrepreneurs who could benefit from entrepreneurship activities.

STRATEGY 3 INCREASE AVAILABILITY OF ENTREPRENEURIAL EDUCATION

Action Item: Encourage development of entrepreneurial courses at K-12 level

According to the 2007 Education Commission of the States, 18 states have taken legislative action to support entrepreneurship education for kindergarten through 12th grade (K-12) or post-secondary school students. Nine states have enacted legislation supporting some form of entrepreneurship education in grades K-12 including: California, Florida, Illinois, Iowa, Minnesota, Nebraska, Oregon, Virginia, and West Virginia. The legislation in California, Florida, and Iowa simply requires that the K-12 curriculum include the entrepreneurship concept, while Minnesota and Virginia mandate entrepreneurship programs.

While Kentucky is not among the states that have mandated entrepreneurship education at the K-12 level, the Kentucky Council on Economic Education has developed a high school unit of study in entrepreneurship. This entrepreneurship unit could be part of Tech Prep, High Schools That Work, career academies, work-based learning programs and in high schools that are structured around career themes.



This program is a great step toward exposing high school students to entrepreneurial opportunities, but Kentucky should consider expanding entrepreneurial education to at least the middle school level and possibly elementary school. A variety of programs are available for this purpose. One such program, Rural Entrepreneurship through Action Learning (REAL), was created in North Carolina and is now used in 43 states. The K-8 REAL curriculum encourages younger children to create an in-school community with an entrepreneurial sector, court system, and bank that addresses community needs.

Action Item: Assess existing entrepreneurial courses

While many of Kentucky's public universities and community colleges have some kind of entrepreneurship coursework, it is unclear how extensive this is. In addition, the University of Kentucky is currently working to develop the Innovation Network for Entrepreneurial Thinking. This will involve an undergraduate certificate in innovation and entrepreneurship, an entrepreneur-in-residence program, an annual conference, and a research program on regional innovation ecosystems. Similar efforts may be underway at other colleges in the Commonwealth.

KCED should work with the Kentucky Council on Post-Secondary Education and the Kentucky Community and Technical College System to assess all existing entrepreneurial courses and any that are currently in the planning phase. In addition to looking at course offerings, this assessment should also include information about enrollment and graduates, which will be important in marketing the state as having a strong entrepreneurial culture.

Action Item: Encourage addition of entrepreneurship-focused curriculums

Following completion of the above-described assessment, KCED should determine if there are voids in entrepreneurship offerings at the post-secondary level and advocate for additional programs to further develop potential entrepreneurs in the state.

Fourteen states have legislation supporting entrepreneurship at the postsecondary level: Florida, Illinois, Iowa, Kentucky, Massachusetts, Mississippi, Missouri, Nebraska, New York, North Dakota, Oklahoma, Oregon, South Carolina, and West Virginia. The programs supported by the legislation differ greatly across states. In addition, Kentucky is one of three states that have policies supporting "entrepreneurial commercialization" at their universities. Florida and New York allow universities to act as "incubator facilities" and Kentucky, Mississippi, and Oklahoma have encouraged rural economic growth through entrepreneurship. Though Illinois has not adopted K-12 or post-secondary legislation, it has developed a statewide Institute for Entrepreneurship Education charged with supporting entrepreneurship education throughout the state.

Kentucky officials might consider expanding its legislative support for entrepreneurial education at the college level by exploring legislation in other states mentioned above.